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Textile World

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12 MORE MONEY-SAVING Stainless ENDURO JIGS

After four months' experience dyeing silks and rayons in these 12 jigs made from stainless ENDURO*, this Pennsylvania dyehouse reports: "Our cleaning time for color changes has been cut to less than 10 minutes. Expensive bleaching agents are saved. More batches per day are obtained in each machine. Spotted goods and redye costs have been banished. Idle equipment has been eliminated." Briefly, this dyehouse, as well as dyehouses everywhere, are installing equipment made from this perfected stainless steel *because it saves them real money.* You should get all the facts. They can be secured by writing Department TW. *Reg. U. S. Pat. Off.

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Textile World

February, 1937

Editor: DOUGLAS G. WOOLF

A Sorry Mess... and Its Lessons

IN our opinion, the General Motors strike situation had more sour spots in it than any other single-company crisis that we can recall.

Here are a few of its sorry manifestations: (1) The entire recovery program of a great nation impeded and even permanently threatened; (2) private property occupied by invaders for a period of weeks; (3) the Secretary of Labor stating publicly that the "legality" of such invasion of public property had not been decided; (4) a labor-leader publicly calling on the President of the United States for support in payment of political services rendered; (5) the same labor-leader demanding the right to speak exclusively for the employees of General Motors despite the fact that his unions, far from representing a majority of the workers, had a membership of certainly under 25% in G. M.

If all that doesn't add up to something, we have forgotten our arithmetic.

But that is only part of the troubled labor situation in this country. Simultaneously with this G. M. strike, but not related to it, there has developed recently a national recognition of the menace of labor union racketeering in certain fields, particularly of the service type.

The net result of these two threats has been to make sober-minded people in both the employer and employee groups jittery—to put it mildly.

IT is pertinent to inquire what lessons can be learned from this mess—because obviously both management and labor have got to do something about it if the future is to be protected.

On the labor side, the wise union leaders must see that some restraint must be placed upon the activities of their less wise contemporaries. We cannot believe that reckless and unfounded claim of representing a majority; or the use of the "sit-down" strike, constituting a usurpation of private property; or the coercion of helpless employers and employees, to the tune of intimidation and assault, can be classed as "wise" tactics. They are undoubtedly more harmful, potentially, to the cause of labor than to industry itself.

We in the textile industry know only too well what these threats mean. A little over two years ago manufacturers and their employees were placed at the mercy of a ruthless minority and subjected to the irresistible argument of the "flying squadron." . . . . . Next time, incidentally, the newer innovation, the "sit-down strike," will undoubtedly be added to our troubles.

From all this, it seems that the first lesson to be learned is the need for legislation either incorporating labor unions or in some way placing upon them the duty of responsibility and obligation to the public interest that is now placed upon every other group in our economy.

The growing public clamor for such a step promises that at least this one good will come out of all this evil.

BUT industry, too, has a lesson to learn. We can recognize the following two major needs in the textile industry if a sound basis of industrial relations is to be continued:

***1. The need for continued maintenance of wage and hour standards,* and resistance to wage-cutting pressure which is being brought to bear by allied trades in the apparel field.**

***2. Adoption of a positive stand in favor of broad national legislation* which will help industry in the maintenance of those standards. Such a positive action, we must point out again, is the surest way to stave off discriminatory legislation of the type of the Ellenbogen bill, for example.**

If these lessons are learned by both labor and industry, possibly even the G. M. mess may not have been in vain.

The Editor Says

The Rest of the Story

ONE of the most honest little news-items we have seen for years appeared in the Jan. 20 issue of the *Daily News Record*. It read:

Can Make Money Without Installing Modern Equipment

AN official of a company controlling many manufacturing units, refers to certain plants which have been idle for some time. The intention was not to open these until the company could afford to spend a quarter of a million dollars on new machinery, referring to one of the particular units. However, the margin has become so wide now, that this old equipment can be started up and operated profitably, so long as the present market lasts, the management feels they can go ahead, which they are doing.

This man apparently does not "give out statements to the press"; he merely says what he thinks. And he tells the truth.

It is true, of course, that on current margins on staple cotton fabrics, which we believe are the product under discussion, he *can* use old, inefficient machinery and yet make some money.

But the story doesn't—or shouldn't—end there. He says "so long as the present market lasts," the management feels it can go ahead. The first question to be asked, is whether the management will stop when the "present market" stops. We don't have to grope for an answer. All we have to do is to dip blindfolded into textile history. It will *not* stop; nor will its many competitors who have rushed into the "present market" with all the mechanical junk they could lay their hands on. They will keep on bidding for orders, ever lower and lower, until in time no one can make any money. Only, the man who has been bidding on the basis of his worn-out and obsolete machinery will lose his shirt in a big way, while his efficient competitor will be able to keep his on—and buttoned up—even if he may not be able to afford a new necktie.

Now we try to be realistic and consequently must admit that we don't blame any profit-starved cotton manufacturer for rushing in with anything and everything he has in the way of equipment, and trying to get a little of the money that's in the "present market." But he shouldn't kid himself about what it may mean to himself and his industry. Possibly if he can recall the picture we sketched above—with all the details which we, in a kindly mood, omitted—he may not overstay the "present market" quite so long or so dangerously as he otherwise would.

And, finally, if anyone thinks that the situation offers any argument against the need for modernization and then more modernization, all he needs to do is to go over the textile wrecks of the last ten years: the collapse of one great organization after another, due to failure to keep plant and product up to date. We doubt that he would then put any permanent hope in obsolete equiment.

The men who are "rushing in" right now are not fools; but they will be if they try to stay in.

A $5,000 Investment

ON page 54 of this issue appears an article by our southern editor estimating how much investment is required to give every cotton textile worker his job. The answer is the sizable figure of $5,000—practically the same as that estimated for the Ford Motor Co. by W. J. Cameron who, we believe, first started to explore this interesting territory.

We believe it would be advisable for manufacturers to make these facts available to their employees, and to their local newspapers for the information of the communities concerned.

As our readers know, we do not make a habit of "viewing with alarm." We do not tremble at the thought of the subversive influences at work. The principal reason is that those, or similar, influences have been at work as far back as we can remember, and the country has been going to the dogs regularly every year—and sometimes twice a year—but we're still here doing business at the old stand.

Nevertheless we do think that a little sober thought on the source of, and basis for, our industrial income might make both major groups—employers and employees—feel more sense of responsibility. As the article concludes, some investor must have felt some confidence in the future of the industry, the ability of the management, and the loyalty and stability of the worker, in order to be willing to risk $5,000 to make possible a job for some operative. That thought imposes upon the industry the need for keeping its house in order; upon each individual management the need for keeping able and alert; and upon each worker the need for loyalty and for contributing his part to the stability of the organization.

Harvey Hill

THE premature death of D. Harvey Hill, Jr., associate editor of the *Textile Bulletin*, represented a loss not only to that publication but to the textile industry as a whole. In his capacity as a writer on textile problems, and also as secretary of the Southern Textile Association, he contributed materially to progress in this branch of manufacture. Modest, cheerful, and always helpful, Harvey was known by his many friends as "a swell guy." He will be badly missed.

W. D. Anderson, Jr.

THE month has had more than its share of grief for the textile industry. The loss of W. D. Anderson, Jr., of Macon, Ga., terminated a career when it was at its most promising stage. Only last March he had succeeded to the presidency of the Bibb Mfg. Co., thus giving his noted father much needed relief from part of the burden he carried so long. The industry can ill afford to lose men of W. D. Anderson, Jr.'s caliber.

In the Month's Textile News

Southern Show Plans Near Completion

AS the time approaches for the opening of the twelfth Southern Textile Exposition, Greenville, S. C., April 5 to 10, prospects are that it will be one of the most successful in history of Textile Hall, according to W. G. Sirrine, president of Textile Hall Corp. All available space, except a part of the balcony, has been sold.

Program for the week will include a number of meetings of societies and organizations affiliated with the textile industry. The first official meeting will be of the Greenville Section of the American Society of Mechanical Engineers, with Earle R. Stall, president of Poe Mfg. Co., in charge of arrangements. The annual luncheon of the Southern Textile Association is set for April 9, with Edwin Howard, southern representative of Veeder-Root, Inc., in charge of arrangements.

Chairmen of other committees are John A. McPherson, hotel reservations, J. H. Spencer, rooms elsewhere than in hotels, and L. S. Ligon, reception of distinguished guests.

The March issue of TEXTILE WORLD will contain a guide to exhibits including a floor plan of Textile Hall, names of companies exhibiting and their booth numbers, description of general type of display and new features to be shown, names of representatives, and other information of value to persons contemplating attendance.

Important Meetings Ahead

IT looks like a busy spring for the ardent conventioneers of the textile industry. The annual convention of the American Cotton Manufacturers Association will be held at the Mayflower Hotel, Washington, D. C., May 13 and 14, with a board of government meeting May 12, according to announcement released late in January. Then of course there are the two major shows: Southern Textile Exposition at Greenville, S. C., April 5 to 10, and the Knitting Arts Exhibition at Philadelphia, April 19 to 23. The National Association of Hosiery Manufacturers and the Underwear Institute will hold their annual meetings during the course of the latter event. Committee D-13 of the American Society for Testing Materials will meet in Providence March 10 to 12. The annual dinner of the Philadelphia Textile School Alumni Association will be held in the Manufacturers and Bankers Club, Philadelphia, Feb. 22. Cotton Manufacturers' Association of Georgia will hold its annual meeting at the Cloister Hotel, Sea Island, Ga., June 3 and 4.

World Textile Conference

THE conference of textile producing nations called by the International Labor Office, at Geneva, to meet in Washington, D. C., will convene April 2. The purpose will be to examine questions affecting the improvement of social conditions in the industry. Each country will be invited to send a delegation consisting of three members, representing government, employers and employees respectively. Among the countries expected to attend are: Austria, Belgium, China, Czechoslovakia, France, Great Britain, India, Italy, Japan, the Netherlands, Poland, Switzerland, U. S. S. R., and the U. S.

Textile Technologists Re-elect

ALL officers of the American Association of Textile Technologists were re-elected at the annual meeting held in New York, Jan. 13. They include: President, Harry Levine, of Silk Grading & Testing Laboratory, Inc.; vice-president, Ernest Doute, of Eichmann & Hecht; second vice-president, Herbert H. Hatch, of Hatch Textile Research, Inc.; secretary, Bernice S. Bronner, of Brown, Durrell Co.; treasurer, Charles B. Keller, of A A A Silk Laboratory, Inc.

J. J. Reutlinger, formerly of Hatch & Reutlinger, who was leaving the United States the following day to enter into business in Lima, Peru, was presented with a brief case and Spanish dictionary.

Gorman Succeeds McMahon

FRANCIS J. GORMAN, formerly vice-president of United Textile Workers of America, automatically advanced to the presidency due to the resignation of Thomas F. McMahon, former president, to become director of the Rhode Island State Labor Department. Mr. McMahon had served as president since 1921. Mr. Gorman, the new president, was the active leader of the general textile strike in 1934.

Optimism Is Distributors' Keynote

CONFIDENCE in the 1937 outlook was the dominant note at the two major conventions of distributors, held last month in New York. The National Retail Dry Goods Association assembled in annual meeting, Jan. 18 to 22, while the Wholesale Dry Goods Institute gathering was held a week later, Jan. 27 and 28. Discussion of a proposed "Retail Platform" highlighted the retail meeting, bringing forth various suggestions for modification; the aims of the platform, which sought to preserve the best elements of the retail NRA code, were unanimously approved.

The importance of continued close relations between manufacturers and distributors was stressed at both conventions. Addressing the wholesalers on Jan. 27, E. C. Hawley, director of the Bureau of Retail Merchandising of the Armstrong Cork Products Co., Lancaster, Pa., urged fullest use of manufacturers' promotions, but only as supplementing vigorous sales effort by the jobbers themselves. The annual address of Flint Garrison, director general of the Wholesale Dry Goods Institute pictured the jobbers as in line for a prosperous year, emphasizing that they have learned constructive lessons from the depression.

Effect of Flood on Delta Cotton

THE flood which has caused such spectacular headlines in other sections of the country seems at this writing (Feb. 8) to be accepted as the annual spring event, carrying no cause for unusual alarm to the Mississippi Delta. It all goes back to the flood-acceptance mind of the Deltonians who say "We've lived here for 40 (or more) years and only got our feet wet twice."

Reports at the first of the year were that only 350,000 bales of cotton remained stored in the Delta on that date; at requests of mills beginning some 10 days ago and at the blanket order issued by insurance companies, all cotton in the Delta has been on the move now for a week, and the only impediment to complete cotton evacuation is present shortage of freight cars which are at a rare premium. While there may be some inconvenience for mills which were slow in anticipating this situation there is little danger, at this time, that there will be any drastic shortage of Delta cotton due to the actual flood waters.

Japan Cottons...

Exports to U. S. to be restricted as result of agreement reached

AN agreement reached between Japanese textile interests and the American Cotton Textile Industry Mission to Japan, provides for limitation of Japanese exports of cotton textiles during 1937 to 155,000,000 yd., the amount already booked before the agreement was concluded, and the 1938 shipments to 100,000,000 yd., with the option of transferring 25,000,000 yd. from the quota of the latter year to that of the former. Details of the pact reached after the conferences at Osaka were made public Jan. 23 in a statement authorized by Dr. C. T. Murchison, president of the Cotton-Textile Institute and leader of the mission:

"The agreement by Japanese cotton textile interests to a definite two-year quota on shipments of all types of cotton piece goods to the United States was announced as the outcome of negotiations of the American textile mission. The quota agreed upon for the year 1937 is based on existing contracts for delivery during this year which Japanese mills had already on hand at the time the negotiations were completed, and means in effect that no orders for Japanese goods for shipment to the United States will be taken during remaining months of 1937.

"The amount involved, 155,000,000 yd., represents the total volume of business booked for delivery to the United States in 1937 prior to yesterday, the date of the final agreement. A large proportion of this amount had been booked by Japanese mills prior to Dec. 12, 1936, on which date Japanese manufacturers ceased taking orders on bleached goods for future delivery in recognition of the mission's visit to discuss the matter.

"The basic quota set for 1938 is 100,000,000 yd., which represents an increase of about one-third over estimated shipments for 1936. However, in recognition of the fact that the 1937 quota of 155,000,000 yd., precludes additional bookings for the remainder of the year and thus eliminates from the 1937 American market those Japanese mills which did not participate in the tremendous increase in sales just prior to the agreement, the American mission granted to the Japanese the option of transferring not more than one-fourth of the 1938 quota to 1937.

"If this option is exercised, the maximum shipments for 1938 wlil not be more than 75,000,000 yd., which is approximately the total amount of 1936 imports. In either event the 1938 quota represents a definite decrease from the 1937 figure, the amount of which was determined by orders already in hand before the negotiations were concluded.

"While no action could be taken in this conference regarding manufactured items made from cotton cloth, such as table cloths, bedspreads, towels, etc., the agreement includes full acceptance by the Japanese manufacturers of the principle of quota application on goods of this type also.

"Provision is made for the establishment of a joint standing committee of the two countries to negotiate an agreement upon fabricated goods within a specific period of time and also to work out the administrative details of a piece-goods agreement."

Hosiery Import Hearing...

Japans plan to restrict U. S. shipments announced

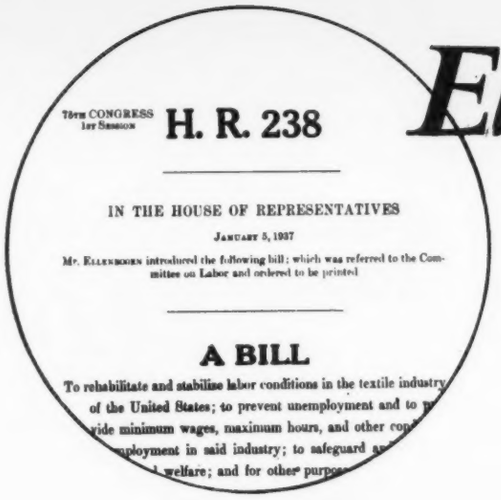
THE question of whether U. S. tariff rates on hosiery imports from Japan should be based on American selling price to give the domestic industry more adequate protection than is afforded by the present ad valorem basis, was threshed out at a hearing before the Tariff Commission, in Washington, D.C., on Jan. 26. The hearing, which was held at request of the National Association of Hosiery Manufacturers, was attended by two groups of trade leaders representing respectively the domestic manufacturers and the hosiery importers.

The case for the American industry to support its plea for higher tariff, as set forth by Earl Constantine, managing director of the Hosiery Association and his witnesses, had two chief aspects: (a) The competitive problem now facing American manufacturers of low-priced cotton seamless hosiery, due to the huge rise in imports from Japan which imports now total 23% of such output in this country; and (b) the threatened extension of this competition to other hosiery divisions.

The hearing was presided over by Robert L. O'Brien, for the Commission, and proceedings were highlighted by two developments: First, the impressive and carefully documented presentation of the U. S. problem as given on the stand by Mr. Constantine and various hosiery manufacturers whose business has been injured by competition with low-priced Japan-made lines; second, the announcement by Takeo Nishizawa, of Mitsubishi Shoji Kaisha, Ltd., that the Japanese hosiery industry in conjunction with the Japanese government has adopted a plan, effective Jan. 1, last, putting a limit of 2,000,000 doz. pr. annually on Japanese hosiery exports to this country.

The hearing opened with an outline of the American manufacturers' side by Mr. Constantine, whose comments were offered as a supplement to the extensive brief on the subject which he filed with the Commission last summer. He emphasized that imports from Japan had risen from 271,000 doz. pr. in 1934 to about 2,125,000 doz. pr. in 1936; that this increase had taken work away from 3,200 workers in American mills; that Japanese hosiery had a port of export value of only 32c. per doz. (present tariff basis) in June, 1936, this being due mainly to Japan's low wage scale, which was 59¾c. male and 24c. female, daily, in Tokio in 1935. Mr. Constantine's witnesses included: Taylor Durham, executive secretary, Southern Hosiery Manufacturers' Association; John Wyckoff Mettler, president, Interwoven Stocking Co.; J. L. Turbridge, of Rome (Ga.) Hosiery Mills, and Alfred Hoffmann, of American Federation of Hosiery Workers.

Mr. Nishizawa's announcement was the highlight of the importers' side as presented by various witnesses, under guidance of Lemuel Skidmore, importers' counsel. Describing the plan to peg hosiery exports here at 2,000,000 doz. pr., Mr. Nishizawa said that the Japanese hosiery associations, with 1100 members, have imposed a 5 sen (about 1.3c) per doz. control fee to raise export prices and to prevent speculation. Other witnesses for the importers included: Geo. Handel, of S. Handel & Sons, and Thos. Barber, who spoke on behalf of Mitsui & Co.



75TH CONGRESS 1ST SESSION **H. R. 238**

IN THE HOUSE OF REPRESENTATIVES

JANUARY 5, 1937

MR. ELLENBOGEN introduced the following bill; which was referred to the Committee on Labor and ordered to be printed

A BILL

To rehabilitate and stabilize labor conditions in the textile industry of the United States; to prevent unemployment and to provide minimum wages, maximum hours, and other conditions of employment in said industry; to safeguard and welfare; and for other purposes

Ellenbogen Bill

Has less support than predecessor

—Other Washington news

By Paul Wooton

TEXTILE WORLD'S *Washington Correspondent*

WHILE the revised Ellenbogen bill has less support than its crude predecessor its defeat or abandonment cannot be confidently predicted. Some of the legislators who ardently supported the first measure are now lukewarm, anticipating the introduction of an Administration measure to cover all industry. NRA rushed to its doom because it tried to cover everything and because it was pushed too fast. Whatever is done this time, it is believed, will be done cautiously, step by step.

For this very reason it may be decided to go forward first in industries like coal and textiles. Since the Administration's immediate plans do not contemplate any change in the Constitution awaiting the outcome of its proposal to expand the Supreme Court, an alternative approach might be the establishment of State standards with Federal prohibition of inter-State shipment of goods that do not conform to the standard. This will mean that any Federal regulatory law would be more general in its terms than those now being discussed.

Indications are that the Guffey Bill will pass. While prevailing opinion is that the chances are greatly against the Ellenbogen Bill, Mr. Ellenbogen is not disposed to hold up his measure awaiting the long fight on the Supreme Court issue and another long fight, to come subsequently, on blanket regulatory legislation.

Indicative of the disposition at this session to proceed carefully was the action of Rep. Kent Keller, of Illinois, who again has been chosen to head the sub-committee of the House Committee on Labor, in referring the new Ellenbogen bill to the Department of Justice for a report on its constitutionality. The measure also went to the Labor Department for report. Rep. Keller, in conversation with this correspondent, was emphatic in his declaration that he wants to work out a bill with which the manufacturers will go along.

In the new Ellenbogen bill a seven-hour day and a 35-hour week is proposed. With this is coupled a minimum wage of $18 for unskilled labor. The National Textile Commission would have authority to authorize time out for meals. This is, of course, only something upon which discussion will be based. The leadership in this Congress is in the hands of conservative Southerners. They are certain to insist upon substantial differentials in favor of the South. As they feel the South was "gyped" by the NRA differentials, possibilities of trouble loom for legislation dealing with that phase of the question.

Hearings on the Ellenbogen bill are certain to be protracted. Rep. Keller has ruled that matters covered in the hearings at the last session will not be gone over again but changes in the situation, as well as in the bill, give plenty of latitude for discussion.

Walsh-Healey Exemption

Granting of the Cotton-Textile Institute's appreciation for an extention of the exemption for the employment of girls between the ages of 16 and 18 years, is seen as an indication that there is no disposition to be drastic in administering the Walsh-Healey Act. The exempton was extended until April 1. A part of the understanding was that no girl in the 16-year class would be employed who was not on the payroll Oct. 15. The only new condition imposed was the requirement of a specific lunch hour for women workers.

Testimony presented by the Children's Bureau indicated that recommendations soon would be made to Congress with regard to the employment of girls between the ages of 16 and 18 years but that the study of the question is not yet complete.

The report of the Public Contracts Board points out that not more than 5,000 of the 447,200 employed in the cotton textile industry are in this age group. Since only a portion of the industry works on Government contracts the board expresses the opinion that the numbers involved do not constitute "an important factor."

With officials in Washington haunted by the spector of a 14,000,000 bale cotton crop, an effort is certain to be made at this session of Congress to substitute a more effective control over production than is possible under the soil conservation and domestic allotment act. An acute surplus problem is feared by New Deal officials if there is normal weather in 1937. While there is some sentiment in Congress against a policy of scarcity the Administration has such large majorities and such skillful leadership that prospects favor the adoption of a substantial part of any program proposed.

Cotton Production Control

That a return to the old AAA form of control is in contemplation was indicated when Henry A. Wallace, the Secretary of Agriculture, expressed the opinion that the feature of the present law which provides for the setting up of little AAA's in the separate states would be unworkable. A recommendation for the repeal of that phase of the law was then clearly foreshadowed.

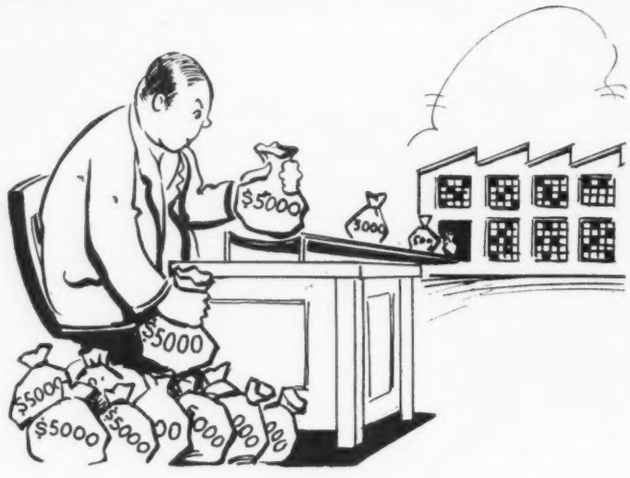
The feeling is widely held, on Capitol Hill as well as among agricultural specialists, that what the AAA calls balanced production cannot be obtained, under ordinary weather conditions, by attempts to switch enough production from the soil-depleting to the soil-building crops. By proposing to return to a controlled agriculture a hard problem has been laid at the door of New Deal lawyers but they have been busy on the problem since Jan. 6, 1936, when the Supreme Court tossed the AAA out of the window.

Just what legalistic garb will be formed for clamping down on cotton and other production is hard to imagine but the line of approach may be indicated when the Supreme Court hands down its decisions in the Wagner Labor Act and the Social Security Act cases.

The New Deal is little interested in the constitutional route because it would not be hard to block an amendment in the legislatures of thirteen states.

A $5,000 Investment

was necessary to create each job in the cotton-textile industry



By W. G. Ashmore

Southern Editor, TEXTILE WORLD

FOR every job in a cotton textile mill, no matter how menial, somebody had to put up considerable money to make that job possible. This money, the investor's dollars, went into the purchase of "tools" for the worker. The value of these tools to him cannot be over-emphasized, when by tools we mean land, buildings, machinery, inventory, raw material and working capital—in short, capital investment.

Operation of a mill is for the general benefit of two groups of persons, employees and security holders. The employee is entitled to a decent wage in exchange for his services, and the security holder is entitled to a reasonable return on his money. Therefore, let us consider the position of each under present economic conditions.

Cost of Job per Employee

In the first place, how much does it cost to give the average worker a job? This varies, of course, with the type and location of plant, but a study of replacement costs of five representative southern mills and one finishing plant shows that it would cost an average of $3,818 per worker simply to rebuild the mill buildings and village and to purchase necessary machinery. Broken down according to Table 1, it will be seen that the mill building would cost $1,074 per worker, the village $598, and the machinery $2,146. This does not include cost of land or money tied up in inventory and raw materials. Furthermore, a large amount of liquid or working capital is necessary to convert the raw material into finished products. Taking everything into consideration, the company has an average of about $5,000 invested in each worker's job—in the tools and materials which make his job possible. Broken down into percentages of $5,000, mill building would represent 21.4% of the investment; village, 11.9%; machinery, 42.9%; and raw materials, inventory and working capital, 23.8%.

Comparing capital investment per employee of the textile industry with other industries, it is interesting to note that Ford Motor Co. has to provide each worker with $5,343 worth of tools, according to W. J. Cameron, of that company. Land and buildings amount to $2,008, machinery costs $2,670 and raw materials are worth $665. In addition, considerable working capital is necessary. This is not a great deal more than the amount invested in each worker's job in the textile industry, yet Henry Ford, the chief stockholder in Ford Motor Co., is one of the richest men in the world. Security holders in most textile mills are about as hard up as any group today as far as getting any return on their investments during the last few years is concerned.

Employee's Return

The cotton-textile employee invests his time and efforts in the production of cotton goods. Wages ranged in 1935 from a minimum of $12 per 40-hr. week for unskilled labor to $23.73 per week for skilled loom fixers on fine fancy work, according to Ralph E. Loper Co., industrial cost engineers, which made an exhaustive study that year of wage structures of 50 mills in six southern States. The average wage was $14.34 per week or a total of $745.68 for the year if the operative worked steadily. This may not seem like a large income to some, but it must be remembered that the southern textile worker has compensations and advantages which other labor does not enjoy.

In the first place, there usually are several members of the family employed in the same mill. The average family, with three persons (weaver, female speeder-frame tender, and doffer boy) at work, had a combined earning capacity of over $2,300 during 1935, if all worked steadily.

In the second place, living costs in southern mill villages are extremely low. House rent is almost negligible, averaging $0.422 a room per week, according to this same Loper report. The average worker occupies 1.86 rooms, which means that his total expenses for rent (including water, light and heat) were only $0.79 per week during 1935. In addition, he receives at all times free medical and nursing services, welfare, education for his children, etc.

The third important point to be noted in connection with the textile worker's income is that a comparison of wages received by southern workers outside of the textile industry in 1935 showed that grade-school teachers received an average of $15.17 for 52 weeks or $789 for the year, unskilled workers (such as chain or grocery store clerks) received $11.44 per week, and farm labor from $0.89 to $1.02 per day.

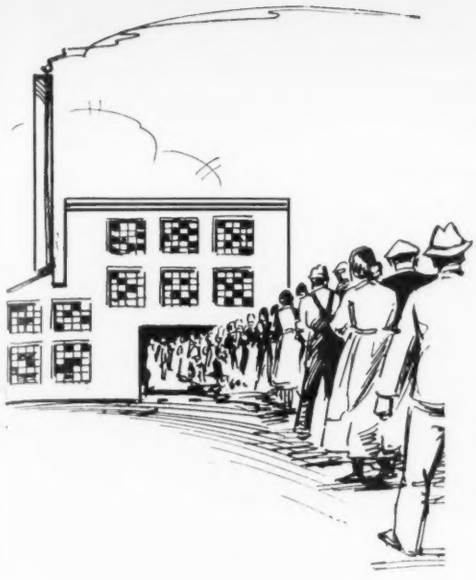
Finally, it should be emphasized that the cotton-textile worker's earnings vary directly in proportion to both living costs and prosperity of the mills. A dramatic example of this was seen in the sweeping upward adjustment of wages approximating 10% which took place in the latter part of 1936.

Going back to the $5,000 investment per job, it is needless to point out that a worker, as an individual, with $5,000 to invest in the tools and materials he uses daily could hardly buy and service one of the cheapest machines in the plant.

Investor's Return

The investor, who put up the original $5,000 which ultimately made possible a job for some worker, should reasonably expect a return of 8% or $400 a year on his money during normal times. Has he received this? If not, how much has he received?

The Federal Trade Commission some time ago began publishing semi-annual reports on profits and losses in the textile industry. Average rates of return on textile investment during 1933, 1934 and 1935 for 500 to 600 representative plants can be seen in Table



For example, the expenditure of manual labor in China is much greater than in the United States, yet China remains backward and poor. Russia realized the importance of tools when first embarking on her five-year plan, and often let her citizens go hungry in order to export wheat in exchange for modern tools. Some of the most profitable gold mines in South Africa were worthless 50 years ago until improved tools made extraction possible and profitable.

As a result of improved tools, made possible by capital investment, the people of the United States, constituting 6% of the world's population, have over 70% of the automobiles in the world, 52% of the telephones, 44% of the radios and 30% of the railroads. Furthermore, the inhabitants of this country have double the amount of life insurance carried by the rest of the world, and more savings deposits than fifteen leading European nations combined with 300,000,000 population.

There is no doubt that the cotton-textile worker participates in the ownership of some of these automobiles, telephones, radios and investments which make the United States the richest country in the world. However, unless some investor had felt confidence in the future of the industry, the ability of the management, and the loyalty and stability of the worker, he never would have been willing to risk over $5,000 which made possible a job and economic opportunity for some operative.

II. From the accompanying figures, with the exception of 1933 with its NRA boom and inventory profits, it is obvious that the average security holder has received nothing like a reasonable return on his investment. In fact, the mills in many cases lost a great deal of his money. Furthermore, from the records of individual companies, the several years previous to 1933 were no more profitable than the years since that time, and, in most instances, much worse. Here, however, it is only proper to point out that 1936 showed a distinct improvement over 1934 and 1935, and the investor bids fair now to get the best return on his money since 1933.

An actual dollar-and-cents comparison of the incomes of employee and investor during 1935, the last period covered by the F.T.C. reports at this writing, shows that the companies in Table II paid out over $231,000,000 in wages—in addition to absorbing a large percentage of the workers' living expenses, as previously explained. Earning an average of $745.68 during 1935, the worker received 14.9% return on the investor's $5,000.

The investor, however, saw a different side of the picture during this period. Not only did most of the companies fail to pay dividends during the first half of the year, but most of them lost money as well—to the tune of over $16,200,000! Conditions improved slightly from July to December, and the 563 reporting companies (excluding thread, cordage and twine) earned altogether a little over $2,200,000—which pulled the year's *losses* down to slightly less than $14,000,000.

Who Benefits?

The textile industry of the United States, providing employment for hundreds of thousands of persons, would never have been built and could not exist without tools provided by capital.

TABLE I—Replacement Estimates for Six Typical Mills in 1936.

Mill	Mill Building	Village	Machinery	Total	No. Employees
No. 1	$250,000	$200,000	$590,000	$1,040,000	220
No. 2	758,000	385,000	1,725,000	2,868,000	715
No. 3	2,500,000	1,500,000	5,000,000	9,000,000	2,300
No. 4	267,835	81,000	306,257	655,092	179
No. 5	622,107	252,000	1,235,339	2,109,446	657
No. 6	443,601	273,424	814,764	1,531,789	435
Total	4,841,543	2,691,424	9,671,360	17,204,327	4,506
Average per employee	$1,074	$598	$2,146	$3,818	.....

TYPES OF GOODS manufactured by mills mentioned above: **No. 1.** Broadcloth and print cloth; **No. 2.** Coarse goods and print cloth; **No. 3.** Colored goods; **No. 4.** Finishing plant (bleach, dye, mercerize, starch finish and shrink); **No. 5.** Fine combed yarns; No. 6. Fine goods, combed and rayon.

TABLE II—Average Rates of Return on Textile Investment.

	1933	1934	1935[1] (Jan.-June)	1935[2] (July-Dec.)	1935[3] (average)
108 Spinning	5.61%	1.06%	*1.34%**	1.15%	*0.35%**
53 Weaving	7.15	*0.03**	0.81	0.32	1.20
296 Spinning & Weaving	6.68	1.29	*1.63**	0.63	*1.04**
6 Dye & Finish own goods	9.36	4.30	*1.01**	0.63	*0.49**
91 Dye & Finish on commission	4.46	*0.07**	1.21	*0.12**	1.09

* *Loss*

[1] Jan.-June, 1935, rates are for 113 spinning mills, 72 weaving, 302 combined spinning and weaving, 11 dyeing and finishing own goods, and 84 dyeing and finishing on commission.

[2] July-Dec., 1935, rates are for 109 spinning mills, 64 weaving, 295 spinning and weaving, 8 stock dyeing and finishing, and 87 dyeing and finishing on commission.

[3] While the number of companies reporting in the two 1935 periods are not identical, they are combined for the purpose of arriving at the approximate rate of return on an annual basis.

Rayon's Record . . .

U. S. production and consumption at new highs in 1936

PRODUCTION of rayon yarn in the United States reached a new high level in 1936, according to figures compiled by the *Rayon Organon*, published by Textile Economics Bureau, Inc., Stanley B. Hunt editor. The output of filament yarn was 277,626,000 lb., compared with 257,557,000 lb. in 1935—or an increase of 8%.

Actually, the increase in production would have been at a much greater rate if lack of installed capacity had not held it back. Consumption of rayon filament yarn in 1936 amounted to 297,594,000 lb., an increase of 18% over the 1935 consumption of 252,676,000 lb. The margin of consumption over production last year resulted in a decrease of 21,533,000 lb. in the 1936 year-end stocks of yarn below the similar 1935 figure to give one of the lowest stock figures ever recorded—representing only about a three-days' supply.

Breaking down the production of filament yarn by processes, viscose plus cuprammonium accounted for 214,926,000 lb., an increase of 6% from the 1935 figure of 202,010,000 lb. Acetate yarn production at 62,700,000 lb. increased 13% over its 1935 total of 55,547,000 lb. Viscose plus cuprammonium accounted for 77.4% of the 1936 total yarn production, the acetate division producing the remaining 22.6%.

Rather "Warm"

THE final figure of 277,626,000 lb. for rayon filament yarn production in the United States in 1936 compares with *Textile World's* estimate of 275,000,000 lb. published in its Annual Rayon Number last September.—*Editor.*

At the end of 1936, there were 12 yarn and staple fiber producers by the viscose process (19 plants), 5 producers of acetate yarn and staple (5 plants), and two producers of cuprammonium yarn (2 plants). Eliminating duplications this makes a total of 16 producers with 26 plants.

Details of the production of rayon filament yarn will be found in Table I, Section A.

The percentage increase in domestic production of staple fiber in 1936 was spectacular, since it more than doubled the 1935 rate. The output last year in this country was 12,400,000 lb. against 5,200,000 lb. in 1935. Thanks to large imports, total available for consumption in 1936 was 25,400,000 lb. against 6,661,000 lb. in 1935. (See Table I, Section B.) If rayon staple fiber data were added to the rayon filament yarn data, the total rayon consumption figure would be 323,000,000 lb. in 1936, or an increase of 25% over the total consumption of 259,300,000 lb. in 1935.

Japan Takes the Lead

Despite the continued forward move on the part of the domestic industry, Japan last year became the world's largest rayon producer, the position formerly held by the United States for nearly two decades. It is estimated that 1936 Japanese yarn production was 275,000,000 lb. and its staple fiber production 50,000,000 lb.—a total of 325,000,000 lb., against this country's total of 290,000,000 lb.

The *Organon* will have figures on world rayon production later in the year, but meanwhile has released rough estimates on 1936 data as shown in Table IV. Included in those estimates are

TABLE III—Yarn Production by Denier (Percent)

	1927	*1928*	*1929*	*1930*	*1931*	*1932*	*1933*	*1934*	*1935*	*1936*
Total Fine Deniers (112 denier and finer)	8.5	9.9	11.5	14.2	19.1	26.0	26.6	26.8	21.0	24.3
Total Medium Deniers (113–162 denier)	74.3	74.0	72.9	71.7	69.1	64.8	62.7	59.5	62.1	61.7
Total Coarse Deniers (163 denier and coarser)	17.2	16.1	15.6	14.1	11.8	9.2	10.7	13.7	16.9	14.0
Grand Total of All Deniers	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table IV—Rough Estimate of World Production

	Millions of Pounds (*est.*)			
	1936	*1935*	*1934*	*1930*
Rayon Yarn Production	1,050	937	770	451
Rayon Staple Fiber Production	275	134	54	7
TOTAL RAYON PRODUCTION	1,325	1,071	824	458

noteworthy increases in German, Japanese, British and Italian staple fiber production and in Japanese yarn production.

Distribution by Trades

In the breakdown of distribution of all rayon yarn, the quantity taken by broad weavers showed the greatest increase from 1935 to 1936, amounting to 217,000,000 lb. in the latter year, or 73% of the total yarn. If it is assumed that this broad-woven cloth would average about four yards to the pound for all constructions, then it would follow that approximately 900,000,000 yd. of equivalent all-rayon woven goods were produced in 1936. Bearing in mind that rayon frequently is used in combination with other fibers for weaving, it is undoubtedly true that rayon was contained in a cloth yardage of at least 1,000,000 yd. during the last year. Details of distribution by trades are shown in Table II.

Production by Denier

Study of the classification of rayon yarn production by denier (Table III) shows that fine deniers increased somewhat in percentage, while both medium and coarse deniers decreased in percentage.

TABLE I—Basic Annual U.S. Rayon Data (Thousands of Pounds)

A. RAYON FILAMENT YARN

Year	Domestic Production: Viscose Cupra & Nitro		Domestic Production: Acetate		Domestic Production: Total		Total Domestic Shipments	Change in Domestic Stocks	Imports for Consumption	Exports	Import Balance	Domestic Consumption
1911	363	*100*	.....	....	363	*100*	315	+ 48	1,800		1,800	2,115
1912	1,111	*100*	.....	....	1,111	*100*	1,117	— 6	1,750		1,750	2,867
1913	1,816	*100*	.....	....	1,816	*100*	1,566	+ 250	2,430		2,430	3,996
1914	2,422	*100*	.....	....	2,422	*100*	2,444	— 22	2,740		2,740	5,184
1915	3,885	*100*	.....	....	3,885	*100*	4,107	— 222	2,450	Not re-	2,450	6,557
1916	5,778	*100*	.....	....	5,778	*100*	5,741	+ 37	900	ported	900	6,641
1917	6,544	*100*	.....	....	6,544	*100*	6,429	+ 115	370	sepa-	370	6,799
1918	5,846	*100*	.....	....	5,846	*100*	5,827	+ 19	180	rately	180	6,007
1919	8,228	*99.4*	50	*0.6*	8,278	*100*	8,219	+ 59	1,072	1925	1,072	9,291
1920	10,005	*98.8*	120	*1.2*	10,125	*100*	7,238	+ 2,887	1,480		1,480	8,718
1921	14,866	*99.2*	120	*0.8*	14,986	*100*	16,475	— 1,489	3,276		3,276	19,751
1922	23,947	*99.5*	120	*0.5*	24,067	*100*	22,631	+ 1,436	2,116		2,116	24,747
1923	34,839	*99.7*	120	*0.3*	34,959	*100*	29,529	+ 5,430	3,029		3,029	32,558
1924	36,208	*99.7*	120	*0.3*	36,328	*100*	40,289	— 3,961	1,954		1,954	42,243
1925	49,429	*96.8*	1,620	*3.2*	51,049	*100*	52,836	— 1,935	5,441	148	5,293	58,277
1926	60,073	*95.8*	2,620	*4.2*	62,693	*100*	51,285	+11,008	9,345	400	8,945	60,630
1927	70,408	*93.2*	5,147	*6.8*	75,555	*100*	85,020	— 9,866	15,028	401	14,627	100,048
1928	91,232	*93.8*	6,000	*6.2*	97,232	*100*	87,984	+ 9,052	12,117	196	11,921	100,101
1929	112,954	*93.0*	8,445	*7.0*	121,399	*100*	116,409	+ 4,767	15,039	223	14,816	131,448
1930	117,543	*92.3*	9,790	*7.7*	127,333	*100*	111,627	+15,361	6,341	345	5,996	117,968
1931	135,249	*89.6*	15,630	*10.4*	150,879	*100*	155,556	— 4,991	1,804	314	1,490	157,360
1932	116,379	*86.4*	18,291	*13.6*	134,670	*100*	151,838	−17,821	197	653	— 456	152,041
1933	172,402	*80.8*	41,096	*19.2*	213,498	*100*	210,949	+ 1,439	934	1,110	— 176	211,883
1934	170,307	*81.8*	38,014	*18.2*	208,321	*100*	194,694	+11,118	77	2,509	— 2,432	194,771
1935	202,010	*78.4*	55,547	*21.6*	257,557	*100*	252,650	+ 2,688	26	2,219	— 2,193	252,679
1936	214,926	*77.4*	62,700	*22.6*	277,626	*100*	297,419	−21,533	175*	1,740*	— 1,565	297,594

B. RAYON STAPLE FIBER

	1928	*1929*	*1930*	*1931*	*1932*	*1933*	*1934*	*1935*	*1936*
Domestic Production — Staple Fiber	165	500	350	880	1,100	2,100	2,200	5,200	12,400
Production as % of Available	*45*	*26*	*40*	*55*	*33*	*39*	*91*	*78*	*49*
Staple Fiber Imports	54	1,052	427	663	2,185	3,302	215	1,457	13,000*
Spun Yarn Imports	146	384	91	52	12	18	7	4	14
Total Available for Consumption	365	1,936	868	1,595	3,297	5,420	2,422	6,661	25,400

* Estimated

TABLE II—Distribution of Rayon Yarn by Trades

Year	Hosiery lb.	%	Other knit lb.	%	Broad woven lb.	%	Narrow woven lb.	%	Miscellaneous lb.	%	Sub-Total knit lb.	%	Sub-Total woven lb.	%	Total shipment lb.	%
1925	10.7	*20*	10.5	*20*	26.1	*50*	2.9	*5*	2.6	*5*	21.2	*40*	29.0	*55*	52.8	*100*
1926	10.3	*20*	15.0	*29*	21.2	*42*	2.2	*4*	2.6	*5*	25.3	*49*	23.4	*46*	51.3	*100*
1927	16.7	*20*	28.9	*34*	31.5	*37*	3.3	*4*	4.6	*5*	45.6	*54*	34.8	*41*	85.0	*100*
1928	14.7	*17*	32.9	*37*	32.5	*37*	3.2	*4*	4.7	*5*	47.6	*54*	35.7	*41*	88.0	*100*
1929	18.8	*16*	43.7	*37*	45.4	*39*	3.1	*3*	5.4	*5*	62.5	*53*	48.5	*42*	116.4	*100*
1930	16.5	*15*	38.0	*34*	49.5	*44*	3.0	*3*	4.6	*4*	54.5	*49*	52.5	*47*	11.6	*100*
1931	21.1	*14*	48.7	*31*	75.6	*49*	4.0	*2*	6.2	*4*	69.8	*45*	79.6	*51*	155.6	*100*
1932	19.0	*13*	38.0	*25*	84.6	*56*	3.9	*2*	6.3	*4*	57.0	*38*	88.5	*58*	151.8	*100*
1933	17.0	*8*	41.3	*20*	141.3	*67*	5.5	*2*	5.9	*3*	58.3	*28*	146.8	*69*	211.0	*100*
1934	14.1	*7*	39.9	*21*	131.3	*68*	4.8	*2*	4.6	*2*	54.0	*28*	136.1	*70*	194.7	*100*
1935	14.7	*6*	37.9	*19*	179.5	*71*	5.2	*2*	5.4	*2*	62.6	*25*	184.7	*73*	252.7	*100*
1936	16.3	*5*	51.0	*17*	217.0	*73*	8.2	*3*	4.9	*2*	67.3	*22*	225.2	*76*	297.4	*100*

Textile Personalities

Albert Gallatin Myers

IF the child labor laws had been in existence 50 years ago the textile industry might possibly have been deprived of one of its most colorful figures: A. G. Myers, whose titles if laid end to end would establish a title-record both for rank and variety of endeavor.

Having to do his share toward keeping the homefires burning, he started stoking them early and when only nine years old got his first job —check boy in a Charlotte, N. C., department store. Eventually, but while still in his teens, he was made cashier of the store. His next step forward was as clerk in the Merchants & Farmers National Bank of Charlotte. In 1905 when Gastonia was just beginning its career as an industrial center, A. G. helped to organize the Citizens National Bank there and took the job as cashier.

In 1920 he organized and built the Myers Mill. With it he took his first presidency of a textile plant. One presidency led to another and two years later he was given that position in the bank he had helped to found. Now, he holds presidential and vice-presidential titles in spinning mills, iron works, textile machinery corporations; he is on the Advisory Board of Liberty Mutual Insurance Co.; director of Jefferson Standard Life Insurance Co., Textile-Industry Credit Corp., N. C., Cotton Manufacturers Association, Southern Combed Yarn Spinners Association, Cotton-Textile Institute. However, all these are side-line jobs compared to his *real* job: Receiver of Textiles-Inc., a combed yarn corporation having 22 mills and a quarter of a million spindles. Under his management during receivership the organization has improved its current position by $1,000,000.

Despite his long career he is still a young man, young enough to enjoy active affairs as well as pleasant recreation. He has three hobbies: His charming wife and daughter, his son who is now at college, and GOLF which he plays around par and always in the money.

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WHEN you have been born and brought up in Gloucester, Mass., it is only natural that you go out and hire a fish when you are to have your picture taken. Concerning the present exhibit, Russell T. Fisher, president of the National Association of Cotton Manufacturers, alleges that "the fish in the picture, especially posed, weighs in the neighborhood of twenty-odd pounds, which is mere brook trout beside the ones I ordinarily catch." In addition to the tradition that no fish ever loses weight in the telling, Gloucester training teaches you how to visit the Motor Boat Show in New York and harass the poor salesmen with questions about the pitch of propellers and such matters. Russell ought to know; he worked several summer vacations in a marine machine shop.

After emerging from Lowell Textile Institute with a Bachelor of Textile Engineering degree firmly clutched in his hand, Russell was with the manufacturing division of Marshall Field & Co. until he enlisted in the 27th Division early in 1917. From there he was sent to the Bureau of Standards in Washington and became Assistant Chief of the Textile Division. Later he joined the N.A.C.M. to start a technical department; and he has been going up ever since, although he managed to skip the office of vice-president.

Russell likes to cruise, he likes to camp, he likes to eat—and he likes to do just plain ordinary nothing.

Russell, the Fisher

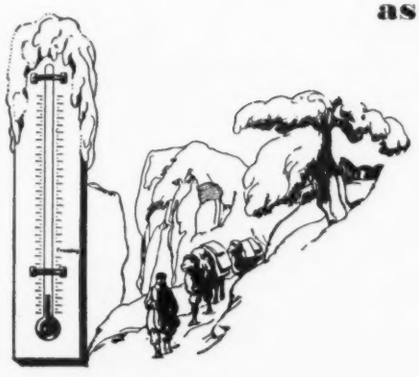
• •

A SLOW-SPOKEN, thoughtful Englishman, Dr. Thomas H. Nelson, has headed the textile department of North Carolina State College for the last 30 years. He is a man who, though not often acclaimed in the public prints, has done much in his own quiet way for the textile industry. Often he has been called on by the mills and by the Government to perform special services. Several summer vacations have been spent in the role of special agent for the Tariff Commission and other Federal departments. Dr. Nelson received his early training at Preston Technical School in England and in fancy fabric mills in both England and the United States. Accepting a position as instructor of warp preparation and weaving in 1901, he was made head of the N. C. textile school in 1906, in which capacity he still serves. He has written two books of importance, "Weaving, Plain and Fancy" and "Practical Loom Fixing," the latter being in its fourth edition. Dr. Nelson is vitally interested in civic affairs and for several years has been a member of the Lions Club of Raleigh. The honorary degree, Doctor of Science, was conferred on him in 1926 by the college in recognition of 25 years of service.

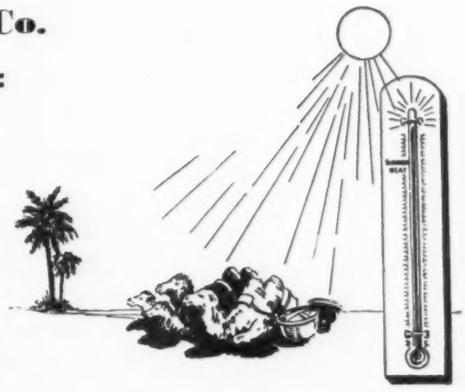
Thomas Nelson

"The Story of Camel Hair"

as told by S. Stroock & Co.



BECAUSE camel hair is gathered in faraway lands, or for some other reason, there seems lack of accurate information concerning it, even in otherwise well-informed textile circles. The booklet recently issued by S. Stroock & Co., Newburgh, N. Y., should prove enlightening to those interested in this fiber. We give an abstract herewith from that portion of "The Story of Camel Hair" bearing on the "harvesting" and grading of camel hair with such omissions as were necessary to condense it. The illustrations also come from Stroock's booklet and are reprinted through kind permission of the publishers.



TWO distinct types of camel are known: The Dromedary, or one-humped variety, and the Bactrian, or two-humped species. The hair of the Dromedary is neither heavy enough nor full enough to permit use in fabric manufacture, and it is from the Bactrian that we get "Camel Hair." This breed inhabits practically all parts of Asia, from the Arabian Sea to Siberia, and from Turkestan all the way across the Steppes of Tartary, Tibet, Mongolia and Manchuria to China.

Though subjected to rigorous extremes in temperature, the camel is afforded an immunity by its fleece both to the cruel lashes of icy winds and the merciless rays of the desert sun. It must undergo as great a temperature change as 50 or 60 degrees within the course of a few hours. Camel hair, indeed, is a remarkable fiber. Blessed by nature not alone with warmth-giving qualities, but with cooling properties as well, it has also a superb radiance of color-tone, a rich luster and a delightful softness.

The first person, perhaps, to make a systematic study of the Bactrian camel of Asia, was an English Army officer of India, Captain Thomas Hutton, author of a study of the wool published in 1842, who introduced the fiber to British industry.

It is interesting to note that the hair is neither sheared nor plucked, as with other fleece-bearing animals. In the spring, as the temperature grows milder, the hair begins to form matted strands and tufts, hanging from head, sides, neck and legs, from which it falls off in clumps. The long hair of the camel makes way for a fresh growth. By the time warm weather has definitely set in, the animal has almost completely lost its winter coat. It is never bare, for the fresh, young and soft undergrowth, or "down," is now visible. Only in this one instance, where the "down" is desired, must the animal be plucked, giving up a product which is in demand for certain special fabrics of extraordinary quality.

In looking at photographs of a caravan, the figure of a man trailing the last camel is often to be seen. He is the "trailer." The animal sheds its fleece not only in the spring, when the greatest quantity is obtained, but the year 'round is rubbing off chunks of hair. The task of the trailer is to pick up the hair as it drops, and place it in baskets, strapped to the last camel in the caravan. The hair is also to be found in the morning at the spot where the caravan rested for the night, the camel rubbing it off himself. Where batches appear ready to fall, they are pulled free and stuffed into the baskets.

The first town reached by the caravan is usually where the hair is sold, generally to traveling compradores, who, in turn, forward it to the terminals, where it is sorted and graded preparatory to export.

The outer hair of the animal is coarse, tough and wiry, with ends as prickly as the cactus. The fiber is thick and brittle. This is Quality No. 3, and is used by the natives for cordage, tenting and blankets.

Beneath the outer hair there is a somewhat better growth, which is more or less a combination of the outer hair and the shorter, or less coarse part of the fleece. This is Quality No. 2, previously used in oil-press filter-cloths, driving belts and floor coverings, but lately introduced into the apparel market as an inferior substitute.

Quality No. 1, which appears next to the hide, is a short, soft and silken fiber that is really a "down." Despite its slenderness, the fiber has great tensile strength, which makes it readily adaptable to fabric manufacture. This is the true camel fiber of excellence. It is this hair, which for years upon years has been used in the production of fine camel hair cloths.

After the three basic grades have been segregated, the No. 1 hair is combed and the "top" removed, leaving "noil," the quintessence of fineness in camel hair and not a waste as in other fibers. Some fabrics are made of a blending of Quality No. 1 with a certain proportion of the "noil." Some very costly camel hair cloths are made wholly of this "noil."

The diameter of a "noil" fiber measures 10 to 12 microns (a micron equaling 1-1000 of a millimeter), which is approximately 1-2500 of an inch in thickness. This is much finer than the No. 1 hair, which ranges from 20 to 28 microns, or about 1-1000 of an inch. The outer hair of the camel, Qualities No. 2 and No. 3, vary in diameter from 75 to 100 microns, approximately 1-300 inch.

Individual hairs contain "medullary canals," each of which is inclosed within a double-walled sheath and encompassed by an air space, such as the inner container of a thermos bottle. The air space is filled with oxygen particles, which give to the fiber its insulating quality.

Camel hair is alive with static—that so-called "life" attribute which the fiber retains long after it is removed from the living camel. A contributing factor to the softness of the underhair is its relatively smooth covering of epidermal scales, in contrast to the same scales on the outer hair, which have an actual saw-tooth aspect.

By and large, good camel hair possesses a beautiful pale tan shade. At times, other colors are available in limited quantities, some of the better hair grown by the camel of India being almost a dull black. And small shipments of white fiber occasionally are received. In some parts of Mongolia the tan hair has a pinkish cast; in other sections a yellowish one.

Salesmanship Plus . . .

Clever promotion builds big market for Botany wool tie

IT ALL started in 1930. Due to a sudden change in fabric styles, Botany Worsted Mills found itself burdened with a substantial stock of sheer-weight challis for which there was apparently no market. Charles F. H. Johnson, Jr., son of Botany's president, had just returned from England where he had been studying the wool necktie developments. If Englishmen could be sold wool neckties, why not Americans? Thus reasoned Mr. Johnson, Jr. And he saw in the idea a profitable way to dispose of the surplus stock. Company heads, including his father, felt the plan worth trying, so he was granted a fund of $3,000 with which to start a neckwear department.

Thus it was that the Botany tie came into being. From an experiment in 1931, the department has grown until today it consumes one-tenth of Botany's output, making 1,500,000 ties yearly.

There is a story behind it—of course! A story, chiefly, of vigorous merchandising, but in which manufacture and finishing also played an important part. Botany's neckwear department, when first created, was used for shipping only. The fabrics were supplied to two small neckwear companies which made the ties on contract. In 1933, Botany bought the entire tie manufacturing equipment of the smaller company, and installed this equipment in the Botany mills at Passaic, N. J., where the ties were made from that time on. The following chronology of the neckwear department's floor space at Botany mills tells its own story of growth:

1931: 400 sq.ft. Ship. only.
1932: 2000 sq.ft. Ship. only.
1933: 4000 sq.ft. Manufacture and Ship.
1934: 10,000 sq.ft. Manufacture and Ship.
1935-6: 18,000 sq.ft. Manufacture and Ship.

The merchandising phase has three main divisions: (a) Overcoming sales resistance; (b) advertising, etc.; and (3) auxiliary promotion. On the first point, it must be remembered that Botany was developing a new market. In 1931 the average American man did not wear wool neck-ties; he thought of wool ties as impractical. The word "wool" seemed to be an obstacle to sales. When first marketed the tie was identified as the "Botany Wool Tie"; after a year however, the term "wool" was eliminated in favor of the "Botany Tie" under which name it became a best-seller. The sheer challis, itself, was ideally suited to neck-wear manufacture, and once the resistance to the wool neck-tie idea was overcome, demand grew rapidly. An important point has been close cooperation between Mr. Johnson, for the mill, and the Lewis Steiger Co., which firm since 1932 has been sole distributor of Botany ties. With respect to advertising, the record follows:

1931: no advertising.

1932: moderate use of dealer displays and some direct mail.

1933-4: used all trade papers reaching retailers, also dealer displays and direct mail; 1935, started national consumer drive in big circulation weeklies, reducing trade paper use, and continuing direct mail.

1936: mostly consumer magazines, but including trade papers nearest consumer, and also starting ads in football programs and a radio test campaign.

1937: general expansion projected, with chief emphasis on consumer magazines.

One vital factor in Botany's successful necktie merchandising has been to link up the drive with events of interest to men. This is exemplified in the Botany Football Tie Award, a major feature of the promotion. This award, which was started last fall, has proved so effective a business-builder that the company plans similar tie-ups with golf and other sports. The rules are: Any man who attends a football game wearing a Botany tie, can get a new tie free, if that particular game ends in a tied score. To get the free tie the football fan cuts out a Botany tie advertisement from the program of the game and mails it, together with label from tie he is wearing, to the company. If retailers advertise Botany ties in such programs and Botany does not, the company supplies free ties as prizes to retailers for their contests. The sales slogan in this promotion is: "You win—when they tie—with Botany Wrinkle-proof ties."

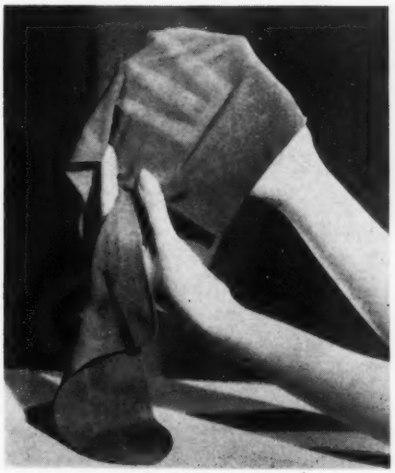
Broadly speaking, the merchandising drive has focussed on two main points: (a) wrinkle-proof; and (b) resiliancy.

Reviewing the history of his department, Mr. Johnson told of various problems in finishing and printing the neckwear fabrics. Color discharge proved difficult, especially the discharge of whites. The chief designs in Botany ties are stripes, mixed effects, dots and plaids. Since these had to be more minute than in dress fabric designs, clarity in printing was a major issue, and it was only after prolonged experimentation that satisfactory sharpness of printing was achieved. The scope of the problem is evident when it is realized that Botany's neckwear department uses nearly 500,000 yd. of specially finished fabric annually.

To textile manufacturers generally, the significance of Botany's neckwear accomplishment lies in the fact that, through vigorous and original merchandising effort a nation-wide market for wool goods was created in a new untried field. It was uphill work, in educating the consumer and in perfecting the product—but it brought results.

"Ringless" Suit Heard . . .

Validity of Kaufman patent main issue in Philadelphia testimony



THE long-awaited trial to determine the validity of Charles A. Kaufman's patent for the manufacture of full-fashioned hosiery by the three-carrier method opened in Federal Court, Philadelphia, on Jan. 11, and ended Feb. 2. Counsel were asked to file their main briefs March 22, and their replies April 5, and April 9 was set for argument thereon. It was expected that decision would be rendered within two months from that date.

The so-called "ringless" case, one of the most important in the history of hosiery manufacture, has split the full-fashioned branch into two opposing camps. It hinges on an infringement suit brought by Textile Patents Corp. and Julius Kayser & Co., holders of the Kaufman patent, against Rosedale Knitting Mills. Each side is understood to represent about one-half of the 15,300 full-fashioned machines in the industry. The Textile Patents group includes such firms as Berkshire Knitting Mills, Apex Hosiery Co., Van Raalte Co., while the Rosedale group includes Gotham Silk Hosiery Co., Nolde & Horst Co. and Quaker Hosiery Co.

Trial of a counter-suit, which has been filed by Rosedale Mills, alleging breach of the anti-trust laws, has been set for March 1 to March 3.

During January several dozen witnesses were examined by a battery of legal talent, and a vast quantity of exhibits was submitted as evidence. The trial was presided over by Federal Judge Oliver B. Dickinson. Trend of testimony for the plaintiff indicated early in the proceedings that the basic aim was to establish (a) that for many years the hosiery industry had found "rings" a handicap and had tried to get rid of them, and (b) that no such thing as a really "ringless" stocking ever was marketed before Kaufman invented the three-carrier method. The defense, on the other hand, sought generally to establish that Kaufman's patent was invalid because the yarn-mixing principle for eliminating rings, bands, shadiness, etc., had already been used in both weaving and knitting prior to the granting of the three-carrier patent; the defense also laid stress on the seven-party patent pool arrangement attributed to the plaintiff and the subsequent plan to tax "outside" manufacturers 50% higher royalties than that to be paid by these within the "pool."

The plaintiffs' contention that Kaufman's invention was the first device to fill the hosiery industry's long-felt need of "ringless" stockings was supported by extended testimony. Various prominent hosiery men were called to the stand by the plaintiffs' counsel, led by former Federal Judge Hugh M. Morris.

These witnesses included Prof. Gilbert R. Merrill, of Lowell Textile Institute, C. F. Meyer, of Textile Machine Works, E. M. Schenke, of the National Association of Hosiery Manufacturers, John M. Botts, president, Harrington & Waring, Chas. R. Van Horn, of H. C. Aberle Co., Chas. J. Huber, laboratory director, U. S. Testing Co., F. Elwood Struve, of Apex Hosiery Co., and Miss Irene Blunt, secretary, National Federation of Textiles, Inc.

Mr. Huber, who was testifying under subpoena, said "rings" had long been a main problem in hosiery manufacture prior to invention of the three-carrier method.

Mr. Struve is treasurer of Textile Patents Corp. and testified at length, regarding that company's method of licensing "ringless" equipment users. After identifying sample license agreements providing for 5c. per doz. royalty which contracts had been substituted for the original 10c. royalty agreements, the witness disclosed that "ringless" royalties paid Textile Patents Corp. by 147 licensees totalled $868,147 up to Jan. 13, 1937.

The case for the plaintiff closed Jan. 14, and Samuel E. Darby, Jr., chief defense counsel, opened for Rosedale with Arthur S. Browne, patent expert, of Washington, D. C., as his first witness. Mr. Browne quoted various documents and books which described the success attained in the past by broad-silk manufacturers in eliminating fabric defects by methods allegedly similar to those patented by Kaufman. This was in line with subsequent testimony of numerous witnesses, the general aim being to indicate that, before Kaufman patented the three-carrier method, the textile industry already had eliminated fabric imperfections caused by unevenness in silk yarn, which was a basic cause of hosiery "rings." On Jan. 15, over objection of the plaintiff the defense was successful in having admitted as evidence an application for a patent filed by Hans P. Luhn, former employee of Textile Machine Works. Mr. Luhn, who was a member of the seven-party pool arrangement, testified that he conceived the idea of eliminating hosiery "rings" in 1928 and worked it out on the three-carrier plan prior to leaving the employ of Textile Machine Works in 1930. The defense attached particular significance to this testimony; Kaufman filed application on May 20, 1932, and received his patent Aug. 7, 1934. It was brought out that Luhn had filed his application prior to granting of patent to Kaufman.

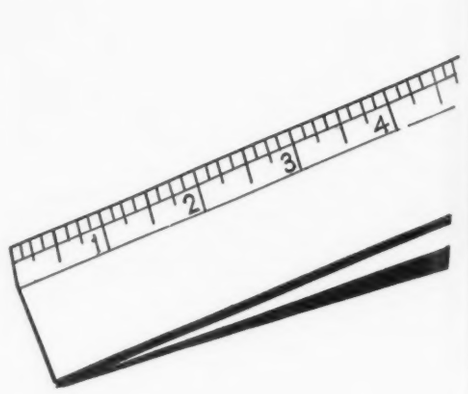
The defense continued its effort to establish priority by calling Paul Krenkel as a witness on Jan. 19. Mr. Krenkel, also a member of the seven-party arrangement, said he filed application for a "ringless" patent Dec. 5, 1932.

Krenkel, when later recalled to the stand, identified a stocking made on his three-carrier attachment on Oct. 18, 1932, in Oakbrook Hosiery Co., mills, Reading, Pa. Other defense witnesses were: Henry Janssen, president of Textile Machine Works, who testified regarding his own "ringless" invention, Herbert Suess and Kurt Waechtler, Krenkel's associates, and I. C. Eberly, of Oakbrook Hosiery Co. The only testimony given by Charles A. Kaufman himself was of routine nature when he was called as a defense witness.

Should a weaver see

Every Inch of Cloth?

THE FOLLOWING QUESTION was submitted to *Textile World* by a reader: *"Presuming that woven fabric on a loom can be seen by the weaver only from the fell of the cloth to the take-up roll (say, a distance of 7 to 10 in. on a 60-in. Draper D-Model), should a weaver be given an assignment of looms so large that he (or she) can see each loom only once during the time it takes to weave from 1 to 5 yd.; or should he be given an assignment just large enough so that he will be able to see all of the cloth woven and thus be sure of making perfect fabrics?"* We referred this inquiry to Mr. Moberg, who replied as follows:



THE question is one that is of the utmost importance in weaving, but it is a hard one to answer. The reference to "perfect cloth" cannot be taken literally, as there is no such thing as perfect cloth, and any buyer will tolerate some imperfections. All that can reasonably be expected is a commercially acceptable fabric. If the weaver should see every inch of cloth that is woven, it would be as perfect as humanly possibly; but still it would not always be perfect. Laying out a loom set so that a weaver would see every inch he weaves may be a costly arrangement, particularly on cloth with low pickage.

The automatic loom of today, if properly fixed and adjusted, may run for hours—and sometimes days—without making a defect. There must be a degree of confidence in the looms and reasonable chances taken of letting them work alone for certain periods. If this is not done, the cost of weaving will be so high that it will be impossible to compete with others. The more a weaver sees the cloth, the less looms per weaver.

The frequency of a weaver's inspection depends upon the material, the picks per inch, the condition of the loom, the speed of the loom, etc. No hard-and-fast rule can be given and it rests upon the overseer to determine the number of looms per weaver so that only reasonable chances are taken.

To illustrate this point, assume that a weaver is making a velveteen with 300 picks per inch, loom speed 120, at 85% efficiency. For the weaver to make one inspection for every yard woven (a working figure), he would have to see each loom:

$$\frac{36 \times 300}{60 \times 120 \times 0.85} = 1.8 \text{ hr. approximately.}$$

This, of course, would be too infrequent inspection of the loom on this kind of fabric. It would mean that the weaver could attend 105 looms, which would be altogether too many. An average set on this kind of work would be around 25 looms.

Suppose, however, that the weaver is making an open-mesh, leno fabric with 8 picks per inch. To see every yard woven, he would have to inspect the cloth:

$$\frac{36 \times 8}{120 \times 0.85} = 2.8 \text{ min., approximately.}$$

This would be too frequent inspection and would mean less than three looms per weaver, where the average would probably be around twelve.

The calculations show how difficult—if not impossible—it would be to determine a rule for the frequency of a weaver's inspection of the cloth. Such a rule would have to be different for each condition; and still it could not be adhered to practically, since it would involve changing a weaver's set for each style of cloth.

On a Draper D-Model, running on a 96x65 fabric at 120 picks per minute and 85% efficiency, a weaver might, for example, attend from 18 to 24 looms. Since it is generally accepted that a weaver can take care of approximately 30 stops per hour, he would pass each loom every 40 min., if he were attending 20 looms and each loom required the full quota of stops. This can be shown by the following calculations:

$30 \div 20 = 1.5$ inspections per hour.
$60 \div 1.5 = 40$ min.

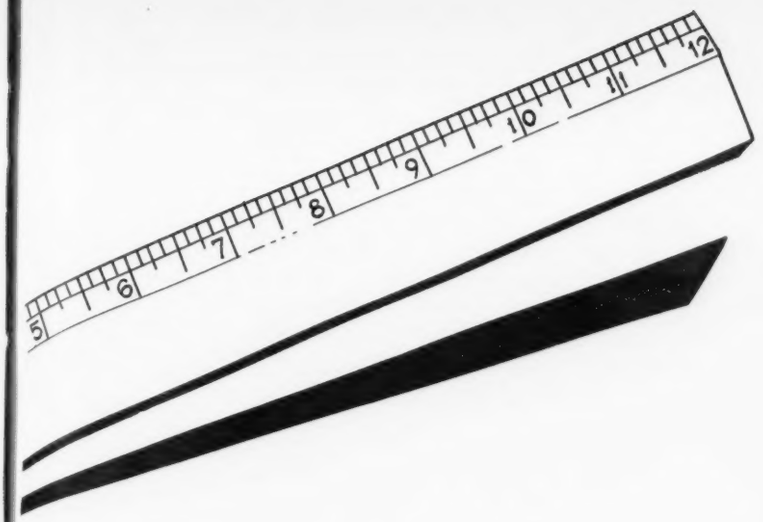
The loom would weave:

$$\frac{120 \times 40 \times 0.85}{65 \times 36} = 1.74 \text{ yd. in 40 min.}$$

These figures are purely arbitrary and must be considered as such. In practice, a weaver does not always require 1 hr. to take care of 30 loom stops, unless there is a small pick-out, a small break-out, or some other fault that will slow him down. It is safe to say that the weaver ordinarily takes care of the 30 stops in about ½ hr. and has time to make another round of his looms before the hour is up. This would make three inspections per hour; he would see each loom every 20 min. and see the cloth once for every 0.835 yd. woven. This is probably as close an inspection as is necessary in most instances.

With reference to the 30 stops per hour which a weaver is supposed to take care of, stops vary considerably in length of time required to restart the loom. For instance, an ordinary stop on one type of fabric may require much less time to restart the loom than a stop on another type of fabric. The number of loom stops, therefore, is a poor yardstick by which to determine the number of looms per weaver and should be used only as a tentative basis. The final determination should be in accordance with the number of looms a weaver can actually handle. For example, it is determined by loom stops that a weaver should be able to take care of 30 looms. If it is found by repeated counting, however, that an average of six looms are stopped, it is obvious that six looms are not producing because the weaver is overloaded. It is then better to rearrange the set so that he will have only 26 looms. This should give approximately the same yardage.

It will be noticed in the above paragraph that the set is reduced by four looms only, while an average of six



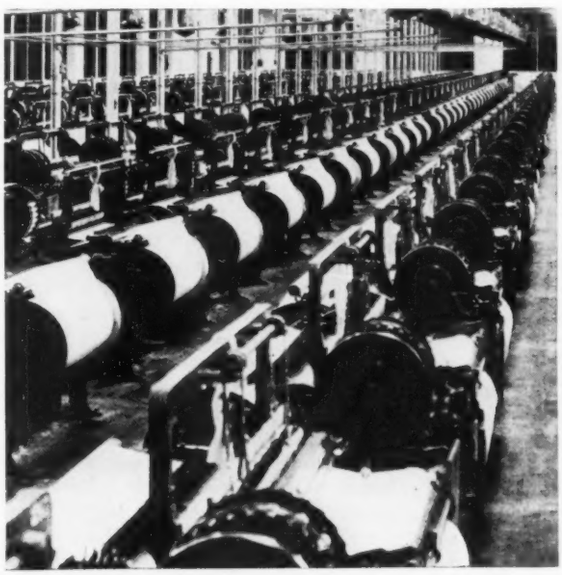
By Ivar Moberg

looms were stopped. The number of looms a weaver can run properly does not stand in proportion to the actual time spent in running them. The interference must always be considered. This may be shown by supposing that a weaver has 15 looms to attend to and that he spends actually 50% of his time on these looms. Offhand, this would indicate that he could run twice the number, or 30, looms.

However, it is evident that the interference he will have from the additional looms must be considered. If, for instance, a weaver would catch a defect running 1 in. with 15 looms, this defect probably would have run 2 in. if he were running 30 looms. He must therefore pick out 2 in. with 30 looms, as against 1 in. with 15 looms. Similarly, if we reduce a loom set, we also reduce the interference and can add a few looms to what the time indicates a set should be comprised of. The final determination of what a set should contain can best be made some time after the starting up of the looms, in order that the machines may have a chance to settle down. Having once determined the number of looms a weaver can attend to, the data should be recorded as a help in determining the set on similar types of fabrics.

If you have the latest types of warp-stop motion on your looms, and either a double-side filling fork or center filling fork, you can increase in length the intervals between the weaver's cloth inspections. Another device which is helpful in this matter is an arrangement that stops the loom when a harness strap breaks. Such a device is simple to make. It is comprised of four levers, one above and one below at each end of the harnesses. These levers are set close to the extreme positions of the harnesses and are connected to an empty drop wire which supports them in an elevated position. If a strap breaks, one end will either rise above or drop below the extreme running position of the harnesses. This disturbs the normal position of the levers, arrests the free movement of the warp-stop motion, brings the loom to a stop, and eliminates long pick-outs.

TROTTING BACK to the inspection period, the question is a difficult one. Have any other readers of *Textile World* opinions on the matter?



Slashing Rayon Staple

Methods which insure good results in weaving and finishing

By A. K. Landau
Saco-Lowell Shops

SOME five or six years ago, mills attempting to weave rayon staple yarns encountered a great deal of difficulty in getting warps which would run with any degree of satisfaction, either as to production or quality. This was due to several causes, among which were the low wet strength of the rayon and the fact that a large portion of the staple was made from waste. During the last few years, however, the quality of the fiber has been vastly improved. Instead of being made from waste, it is now manufactured by a special process of its own, which not only assures the user of a satisfactory yarn, but has resulted in the establishment of a price which vastly increased interest in the product. As in any departure from the beaten paths of routine manufacture, warp sizing of rayon staple calls for a certain amount of experimenting to find out the best method to reach a desired end. In order to help American mills working with rayon staple, the following observations, garnered from experience in the United States and research into the practices prevailing in Europe, are submitted:

The finer staple yarns are very susceptible to stretch, which, if not controlled closely, will make weaving a problem, since the various warp ends will not be bound down uniformly, and the fabric will be full of floats where the loose ends are not properly interlaced with the filling. At the same time, the tight ends will mark the cloth with plainly discernible streaks. Either of these defects will cause the goods to be classed as seconds, or imperfect, and will thus entail a serious loss to the mill.

In addition to the proper control of stretch, the fibers must be sized to bind the filaments in order to resist the chafing incidental to passage through the harness and reed, as well as to bring about the increase in breaking strength needed if the warps are to be run with any degree at all of tension. Some mills attempt to do this work with a light cotton sizing; but the problem is too complicated to be disposed of in so simple a manner, since the essential details are quite different from those of the cotton process.

Stretch Control

Rayon staple yarn can be sized on the regulation cotton slasher if provisions are made to assure an effective control of the tension,—and, thus, the stretch. If the section beams are prepared on the cotton system, it is essential that the beams be true, so that there will be no high and low sides when unwinding to disturb the lay of the yarn. Uneven selvages, especially, give a great deal of trouble, as they simply will not run without breaking out with annoying frequency. The best way to assure a proper start is to use a ball bearing for the beams, and to have an adequate stretch-control unit to take the yarn from the beam and equalize the tension in all sheds of the set before the yarn passes under the immersion roll into the size. This is an important detail, and its neglect will result in tight ends, which weave badly and make the streaks and shiners mentioned previously. The size box such as used with cotton is generally satisfactory, although the open size roll will be found to be of great advantage in helping to secure proper penetration of the size.

In general, during sizing the stretch should be carefully watched—1½% is the limit—as the yarn is very weak when wet. Excessive stretch will cause streaky cloth and increase the liability of streaking and clouding during dyeing or finishing. It also has a tendency to make the tight threads brighten, especially in the darker shades, so that the fabric may have a "straie" appearance.

If yarn is made with crepe twist, the importance of proper sizing cannot be over-estimated, since, if the size is difficult to remove, the quality of the crepeing will be seriously affected, and uniformity will be difficult to secure and maintain.

After traveling through the size, the yarn should be passed through the squeeze rolls with a good thick cushion of high-grade flannel on the top roll, and from three to four thicknesses of ordinary brown sheeting on the bottom roll. This prevents any distortion of the yarn, and, at the same time, assures a proper extraction of the surplus size.

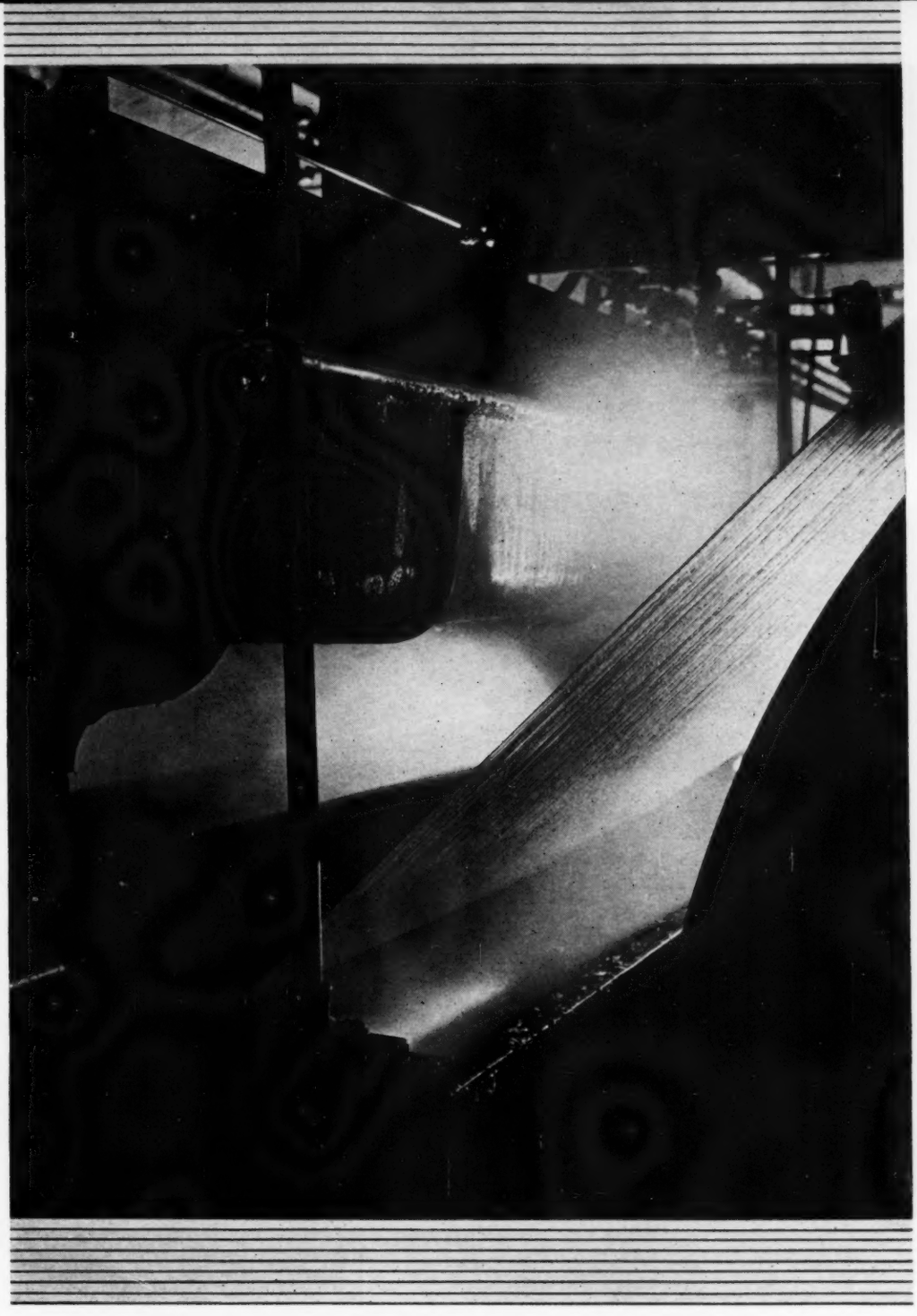
As a rule, the temperature in the size box is from 140 to 200° F., depending on the nature of the sizing material. As with continuous filament yarn, drying is a critical operation, and best results are obtained when the yarn leaves the last cylinder with the proper moisture content and is wound on the beam thoroughly cooled. This is a detail which every one must work out for himself, since there are so many variable factors that a general rule is impossible.

There are two important factors which govern the selection of the sizing material. First, the size must make the yarn weavable; and, second, it must be easy to remove in preparation for the subsequent dyeing and finishing operations.

In general, fabrics woven from rayon staple have a hairy or fuzzy surface, due to the loose fiber ends. For this reason, singeing over a gas flame is usually the first step in finishing these fabrics. Then the goods are run through steam or water to reduce their temperature and thus to prevent burning or scorching. This exposure of the cloth first to dry heat and then to moisture has a marked effect on certain size ingredients. It is important, therefore, to use sizes which resist the singeing process. Likewise the size must be easy to remove from the fabric. If it is tenacious and requires excessive scouring, some of the desirable properties of the yarn may be lost, resulting in a final finish which is limp or unsatisfactory otherwise. Yet, thorough removal of the size is necessary to secure even dyeing, and freedom from dark and light blotches, shadiness, and streaks. Again, if the size is not removed, the goods will be harsh and wiry. It is evident that, in addition to the mechanical problems involved in sizing, the chemical problems are of importance and must be given consideration if best results are to be obtained.

Sizing Materials

There are various size mixtures which have been used, which give satisfaction as far as weaving is concerned, but which are unsatisfactory from the standpoint of finishing. Such mixtures include those containing



"Slashing Textile Warps Before Weaving"—A photomural by Drix Duryea used in decoration of New York office of Bliss Fabyan & Co.

starches which are charred during the singeing operation or which involve a drastic desizing treatment, and those containing tallow or other unsaponified fats which cannot be removed without the use of so strong a scouring agent that it may damage the goods.

Fortunately, sizes are available which possess good binding and covering qualities, leave the yarn soft and pliable, are not affected by singeing, and are readily removed by soap and water or by a desizing agent of the enzyme type.

One mixture which is proving satisfactory has a vegetable gum or flour base. The gum is mixed with cold water in the proportion of 4 to 6 oz. to 1 gal., and stirred until all lumps have disappeared. The solution is then brought to 180°F., sulphonated olive oil is added as a softner, and the mixture cooled to 110 to 130°F. before it is run into the size box. Sizes of this type are usually applied with the immersion roll in the raised position. Drying should be carried out at a low temperature.

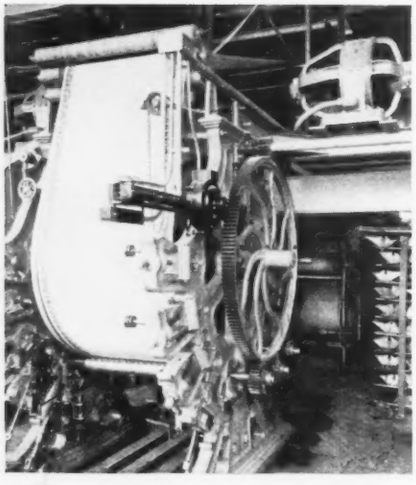
Gelatine base sizes are also being employed with excellent results. As a rule, these are purchased in prepared form and are used in a concentration of about 17 to 20 oz. to 1 gal. of water They are generally applied at a somewhat higher temperature than was recommended above. The gelatine base sizes are water soluble and can be readily removed by the finisher.

Technical difficulties in sizing rayon staple are likely to occur in mills used to sizing only cotton, as often the radical differences between the two materials are not realized. But if proper methods are followed, it is possible to prepare rayon staple warps with good weaving and finishing qualities.

Causes and cures for

Print-Shop Creases

on sheer cotton fabrics



By Francis A. Newton

QUITE frequently in producing blotch patterns on light-weight cotton fabrics, such as are used for handkerchiefs or dress goods, the printer finds it difficult to avoid the formation of crease marks. In the finished material, the fault shows up as two parallel light lines, with a dark line between. This is due to the folding over of the fabric in the form of a crease. The light lines are the result of the color being squeezed out of the cloth at these points, and the dark line between is the edge of the fold where the greater part of the squeezed-out color is trapped. Three most common causes of this fault are: (1) the soft nature of certain fabrics, (2) creasing of back-grays, and (3) use of unsuitable thickeners.

It is fairly obvious that the finer the cloth, the greater is the likelihood of its creasing. A very sheer fabric on which a blotch pattern is being printed will tend to shrink rapidly as soon as the color is deposited on it at the printing machine. If the shrinkage is counteracted by an undue amount of tension on the cloth as it leaves the printing machine, the tendency to crease will become pronounced. If the goods are being led over a set of overhead drying cylinders, there is often a still greater probability that creases will occur.

Padding with Dextrin

There are several steps which can be taken to prevent creases due to the nature of the fabric. Sometimes it is necessary only to reduce the tension on the cloth leaving the printing machine just enough to permit the goods to shrink in width without creasing. On certain very fine constructions, the writer has found that a preliminary treatment of the material is necessary. This treatment consists of padding the cloth through a weak solution of dextrin. In this way a slight stiffening is imparted, which is just sufficient to check the tendency toward creasing as the goods pass over the machine.

Back-grays, when they part from the printed material after the passage through the nips and over a section of the drying tins, are dried and batched up. Ordinarily, if the gray has not absorbed too much color, it is used again. If, however, the gray has become creased in its passage over the drying cylinders, it is impossible to use it again without risk of damage to the prints. That is, if there are any heavy portions on the pattern, these are likely to show up every crease mark from the back-gray.

Spreading Device

While the use of a spreader at the point where the back-gray and the printed fabric separate on the dry cans is desirable, the construction of the drying range may make this impossible. In such a case, a rigid iron bar can often be used instead of a spreader. A square bar is bent in the middle, and fixed in place. The bar should be turned diagonally, so that the material passing over it will be in contact with only one edge. This simple device has proved to be quite a satisfactory medium for removing creases.

A Dilemma

Creases which are due to the use of unsuitable thickeners are usually confined to certain types of patterns in which there is a continuous bar running lengthwise of the fabric. This type of design is frequently used for producing handkerchiefs with solid-colored borders. There is always a tendency for the fabric to crease where this bar occurs, no matter what thickener is used. If a free-flowing paste is employed, the tendency is much greater. This puts the printer in a dilemma, as well-penetrated prints are usually desired, with the design equally good on the face and the back of the fabric. In order to get this effect, use of a free-flowing or "soft" thickener is essential.

In the case of printed handkerchiefs which are to be double hemmed, penetration of the color is not of such great importance, and sometimes the goods can be given a preliminary treatment with dextrin as noted above. As a rule, however, some other approach to the problem is necessary. The first thing to try is to use a printing paste which has a good body and add to it a penetrating agent. There are various penetrating agents which can be experimented with. Among the several types which the writer has found useful, should be mentioned those with a pine-oil base. If this does not give the desired results, use of a gum thickener may solve the problem.

In selecting a gum thickener, one should endeavor to find one which will give a good color yield, a stiff print which will not crease, and which penetrates well. Use of a penetrating agent with a gum thickener is often advisable. At best, it is difficult on sheer fabrics to obtain well-penetrated prints and freedom from crease marks. It will be found, however, that one or another or a combination of the measures suggested above will be of assistance in this direction.

Tags on Machinery

And cards in a file, will save you a headache, once in a while

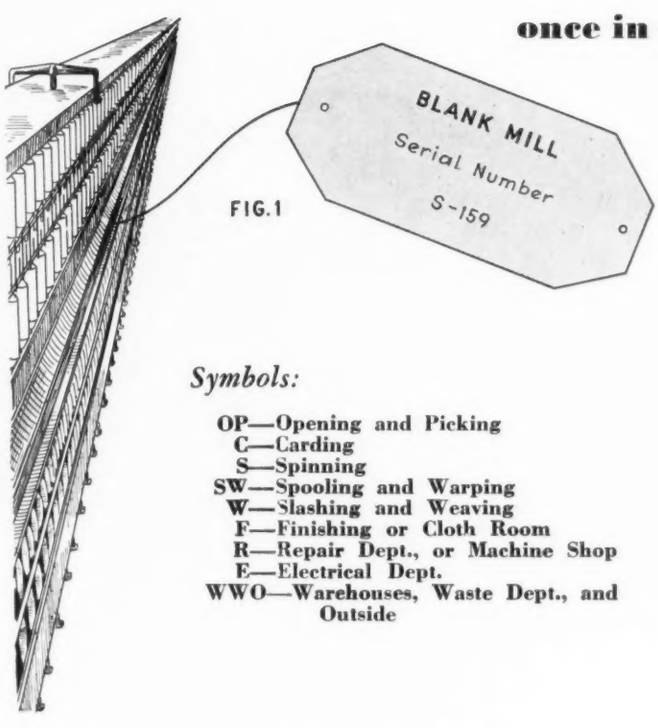


FIG. 1

Symbols:

OP—Opening and Picking
C—Carding
S—Spinning
SW—Spooling and Warping
W—Slashing and Weaving
F—Finishing or Cloth Room
R—Repair Dept., or Machine Shop
E—Electrical Dept.
WWO—Warehouses, Waste Dept., and Outside

FIG. 2

By Horace L. Pratt

HOW many of us have gone home at the end of the day only to find the furniture so rearranged that we would remark to the wife, "Well, am I in the right house?" Yet, I dare say that none of our wives are as bad about moving the furniture as we are about changing things around at the mill. However, if the mill is to make progress, there must be a constant process of change going on to meet the demands of a fickle and ever-changing market, as well as to take advantage of improvements in manufacturing methods.

In rearranging and discarding machinery, there sometimes arises a need for information regarding the original cost of the equipment. Treasurers have a way of wanting to know the value of machines that have been discarded and stored, as sometimes a market can be found for them; but frequently even units of similar kind are not all installed at the same time, so that the cost of each lot will vary. Again, improvements are sometimes made on certain machines, and months or years later it becomes necessary to fix the value of the equipment.

To install the system that the writer is recommending would be very simple in a new mill and would save a lot of headaches later on. The method can also be applied in an old mill by having some competent man work it out, and by estimating some data that, in the average mill, are not available. (As it is, this information must be guessed at every time some one calls for it anyway. Under this system these data can be determined once for all time.)

A metal plate to be attached to each machine in the mill is illustrated in Fig. 1. While it is practically self-explanatory, it will be noted, by referring to the list of symbols, that the plate is to be attached to a frame in the spinning room. At the time the system is installed, the spinning frame may carry the regular machine No. 159, as well as the tag showing that it is Serial No. S159. Later on, however, it may be necessary to move this machine to another part of the room so that it will have to be renumbered, say No. 200; but it will still carry the metal plate showing that it is Serial No. S159, regardless of its location in the department. Even if this frame is removed to the warehouse for storage, it will still carry Serial No. S159; and this number will not be used for any other machine at any future time. Each mill can work out its own system of symbols, according to the number of departments and other local conditions.

The form illustrated in Fig. 2 is to be kept in the main office as a permanent record. A card carrying whatever data each situation may demand is filled out for each machine. Care must be taken that the serial number on the card corresponds to that on the machine, and that the data called for are as correct as possible.

Three files are suggested—one for active equipment in each of the departments, a second for machines in storage, and a third for machinery scrapped or sold. This feature could be developed as the need arises.

Another detail should be followed through when machinery is to be stored. It is seldom the case that a machine can be stored just as it is on the floor, and it must be taken apart and crated. In this case, be sure that the serial number is applied securely to each crate. This will prove helpful later on when it becomes necessary to take the machine out of storage or to check up on some item.

Bedford-Cord Novelties

Spring to life as automobile trade demands variety and originality in its upholstery

By R. A. C. Scott

MR. SCOTT says he has written this article in an effort "to refute by practical demonstration the prevalent belief that there is nothing new under the sun in textile design. This opinion that the textile industry has already entered the field of stagnation in respect to newness in design is held principally by the older generation, and in my opinion is very discouraging to the young designer having the necessary knowledge and sufficient imagination to produce the new creations so widely demanded."

In a continuation of this article, to appear in an early issue, Mr. Scott will describe several novelty weaves of the Bedford-cord variety which, he feels, "are exceptionally new in character and practically certain of adoption by the automobile manufacturers for their 1938 models."

THE growing demand for something entirely new in fabric design by the automobile industry should act as a great incentive to the modern designer. Unfortunately, however, in this day of progress, the oft-repeated, old-fashioned, and fatuous slogan, "There is nothing new under the sun," seems to hold sway. This general contention may be the outcome of ignorance or a convenient weapon used in defense of one's lack of foresight and imagination. Be that as it may, the fact remains that we are living in an age when variety is the spice of life.

By way of refuting the foregoing fallacy, I wish to bring to the attention of my readers a few original ideas peculiar to the Bedford-cord types of weave. As a preliminary step, it would be most advisable to study briefly the correct and systematic construction of the plain Bedford cord; as, without a sound knowledge of its rudimentary elements, it would be well nigh impossible to follow intelligently the formation and creation of novelty effects in this particular weave.

Plain-Face Construction

As the novelties to be explained later are based on the plain-face Bedford-cord construction, we shall confine ourselves to a short study of the method by which this type is built, without touching on the equally important twill-face, alternate-pick, and crepon types.

Examples *A*, *B*, and *C* show the correct method of constructing the ordinary or plain-face type of weave. At *A*, pairs of ends work in plain order with the picks, the number of ends between the pairs of plain ends being varied according to the width of cord required—in this case, six ends. The next stage is illustrated by *B*, which is obtained by the insertion of marks (indicating warp up) on the first and second picks of alternate cords, and on the third and fourth picks of the other cords. The reason for this alternate arrangement of the cord ends is simply to equalize the lifts of the ends. It is quite a common practice, however, to arrange the cord ends as at *D*; but this construction is likely to cause weaving difficulties and is quite unnecessary, in view of the fact that no material difference is visible in the finished fabric. The design is then completed by inserting plain weave on the cord ends, which join perfectly with the plain working of the pairs of ends as shown at *C*. Thus in the complete design the cord ends float over three picks and under one, while the picks float in pairs on the back of one cord and interweave in plain order in the next. In order to accentuate the sunken lines, the plain ends should be separated by the dent wires of the reed. Therefore, the weave shown at *C* could be dented in straight fours or eights, depending upon the construction of the fabric. Where a variation in size of cords exists, a broken system of denting is usual.

The setting of Bedford cords is also important; and, inasmuch as this weave has a definite warp surface, the warp should be finely set. The surface is really plain weave, and only half the picks are on the face in the cord stripes. It is therefore necessary to set finer than plain weave in both warp and filling. A reasonable and practical method of arriving at the correct number of ends and picks is to select the number halfway between the diameter of the thread and the threads per inch for plain weave. Thus, using a 6.4-typp (4-run, 21.33-cut) woolen warp and filling (68 diameters), which would make 34 ends the limit for plain weave, we find that 52 ends and picks would be most suitable for the cloth setting. However, the warp may be set finer or coarser according to price, and in like manner the picks may be reduced. It should be borne in mind at this point that the fewer the picks, the coarser the cord appearance, which of course does not enhance its selling value. It might be advisable to add that, as a general rule, low-quality and open-texture cords are woven face down, this arrangement requiring fewer harnesses to be raised, which in turn requires less motive power to

drive the loom and reduces the wear and tear of the harness and shedding mechanisms.

Hairline Cords

Although Bedford-cord types of cloth are generally associated with solid-color effects or monotones, the inference should not be made that color cannot be effectively introduced in the creation of original and new ideas. For instance, employing the weave illustrated at *C* with warp and filling patterns as below, a distinct alternate-colored cord results, which can be varied in width as required.

WARP PATTERN

Light-brown woolen.	6			= 6
Dark-brown cotton..	1	2	1	= 4
Light-slate woolen...		6		= 6

FILLING PATTERN

Light-slate woolen..	2		= 2
Light-brown woolen.		2	= 2

Remembering that the picks float in pairs on the back of one cord and interweave in plain order in the next, it follows that, where the filling color intersects in plain order with the same color in the warp cord, a solid-color effect will be obtained. Thus the first two picks of light-slate float under the light-brown warp cord and interweave with their own color in the adjoining cord. In like manner, the light-brown picks float under the light-slate warp cord and interweave with their own color in the next cord. In this way, very attractive-looking and novel alternate-colored cord stripes are formed, approximating very closely the much-coveted hairline type of design. Moreover, the two-tone striping will have a more uniform and bolder appearance than the general run of hairlines. If neutral tones are employed, this should appeal very strongly to the automobile manufacturer as something useful, new, and attractively neat in appearance, particularly since it does not increase manufacturing costs in any way.

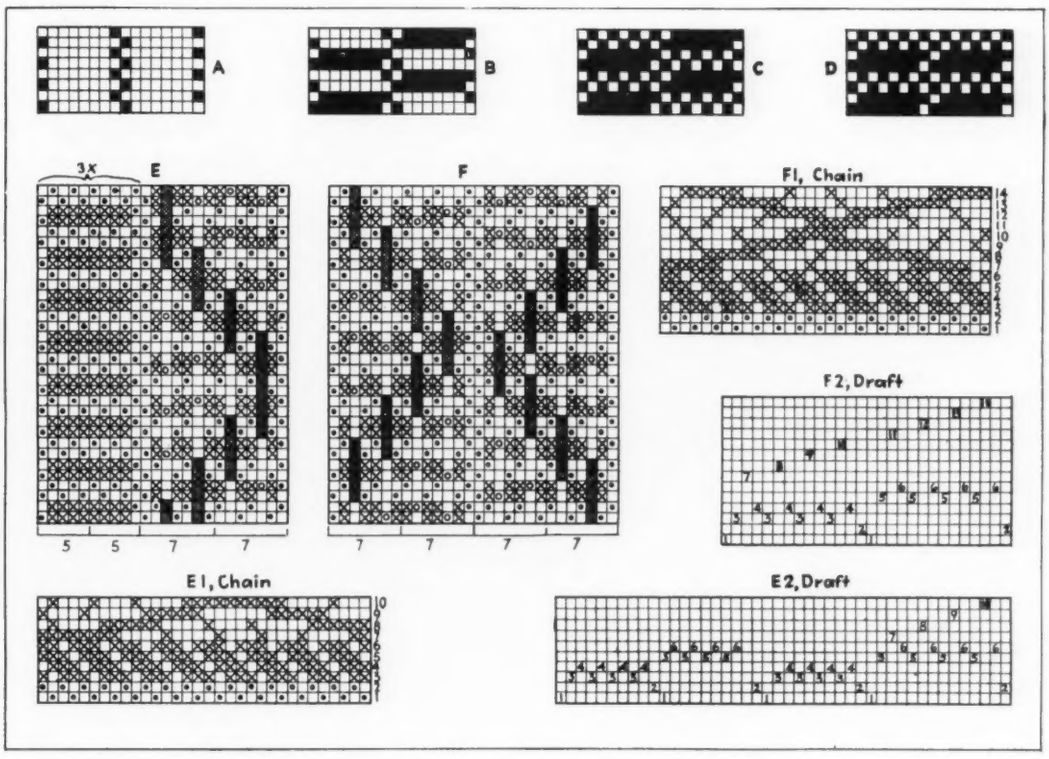
Extra-Warp Decoration

Another method by which the Bedford cord may be modified is illustrated by Figs. *E* and *F*. In these two examples, the introduction of an extra light, dark, or colored thread in prearranged cords produces designs superimposed, as it were, on the surface of the cloth. The method of construction is quite simple and follows the procedure already outlined for the plain Bedford cord with the exception that it is necessary to cram the extra threads in the reed, as indicated at the bottom of plans *E* and *F*.

In the former, the plain cord, which is repeated three times, has eight ends between the pairs of plain-weave threads. These three cords are not arranged in alternate order in the design owing to space limitations; but an examination of the weave chain and draft, *E1* and *E2*, will show that the alternate arrangement has been maintained. The fourth cord, in which the extra threads are introduced, is arranged one end plain, one end cord weave, one end fancy, two ends cord, one end fancy, two ends cord, one end fancy, two ends cord, one end fancy, one end cord, and one end plain weave. It will be noted that this cord has the same weave arrangement as the second cord of the plain section, the only difference being the addition of the fancy threads—see the draft. The fancy ends float on the surface so as to form a zig-zag vertical line which, if desired, may be stitched to the face where adjacent warp floats appear in order to reduce the otherwise excessive floats on the back of the cloth.

The design shown at *F* is constructed in a manner similar to that for the fancy cord of *E;* and it produces in this case an all-over effect in the form of a diamond design without diminishing the prominence of the cord pattern or weave in any way. In each case, the dots represent the cutting and face-cord ends, the crosses indicate the floating warp threads between the cutting ends, and the shaded parts represent the fancy or extra ends, which in turn are stitched to the face cord as indicated by the circles. As before, all marks signify warp up. The weaving chain and draft are labeled *F1* and *F2* respectively.

For automobile fabrics, the extra ends should not have too much contrast in color, as soft contrasts combined to give a neutral-tone effect are in every way more suitable for the manufacturer's purpose. The following color schemes are suggested: dark brown on a light-brown ground, dark slate on light-slate ground, light slate on light-brown ground, and light brown on light-slate ground. Any of these color combinations will have sufficient contrast to produce effectiveness with neatness and at the same time preserve the prominence of the design without being too conspicuous.



Recent investigations give more precise information on suint method of

Wool Washing

Interest has been increasing in this country in the European method of washing wool with suint liquor (Textile World, 3/9/29, 5/30/31). In a paper presented before the Textile Institute Conference in England, Dr. H. Phillips described some of the work which the Wool Industries Research Association has been doing in determining the optimum pH value of the liquor used in the first wash bowl. An abstract of the paper is presented here.

WHEN it is desired to remove as much grease as possible, the pH values of the liquor in the first wash bowl must be raised above the usual pH value of solutions of suint, in order to convert the free fatty acids in the raw wool into soaps. The amounts of free fatty acids in the suint and grease of merino wool are appreciable.

To obtain quantitative data concerning the amount of alkali required to bring raw merino wool into equilibrium with solutions of pH 10, a group of 32 fleeces—all from the same flock—were examined. Half of these measurements and the averages for the complete group are given in Table I. It will be noted that the lower the pH value of the water extract of the fleece, the greater is the amount of alkali (calculated as sodium carbonate) required to bring the raw wool to equilibrium with pH 10. As shown by Freney, suint liquors contain many constituents not found in normal soap liquors, and it is possible, therefore, that they can act as efficient emulsifiers of wool grease at pH values below 10.

As a further step in the investigations, the influence of pH value on the emulsifying power of some suint liquors was assessed by determining the amounts of grease remaining emulsified in the liquors after they had been centrifuged. The amounts of earthy matter that remained in the liquors were also determined. The liquors examined were taken from the wash bowls of three scouring sets and had a pH of 8.64, 8.77, and 9.57, respectively.

The analytical data obtained by the tests are given in Table II. The amounts of total solids, grease, soap, and earthy matter (determined as ash) are recorded as percentages of the amounts present in the original uncentrifuged liquors. It will be noted that whereas the optimum pH value for the suspension of earthy matter is toward the less alkaline end of the range studied, that for the grease is about pH 9. Even in the more alkaline liquors, however, the percentage of earthy matter remaining in suspension is about twice that of the grease.

The results of the experiments suggest that 9 is the best pH value for suint liquors. At this pH value, less earthy matter may remain in suspension than at lower pH values; but the stability of the grease emulsion will be at a maximum.

Another survey of the effect of alkaline solutions on clean wool, and of the influence of the pH values of soap solutions on their detergent qualities, suggests that the maximum alkalinity in the second, third, and fourth bowls, in which the partly cleaned wool is washed, need not greatly exceed pH 10.

The combined amounts of suint and grease, and their relative proportions in raw wool, can vary for many reasons. The data in Table III (obtained by Bonsma and Starke after a study of twelve mature merino wethers over a period of fifteen months) give some idea of the normal quantities of suint and grease and show how the proportions may vary with the position of the wool in the fleece. Wool from cross-bred sheep contains smaller amounts of suint and grease, while mohair and alpaca contain much smaller amounts.

TABLE I—Alkali Requirements of Some Merino Fleeces

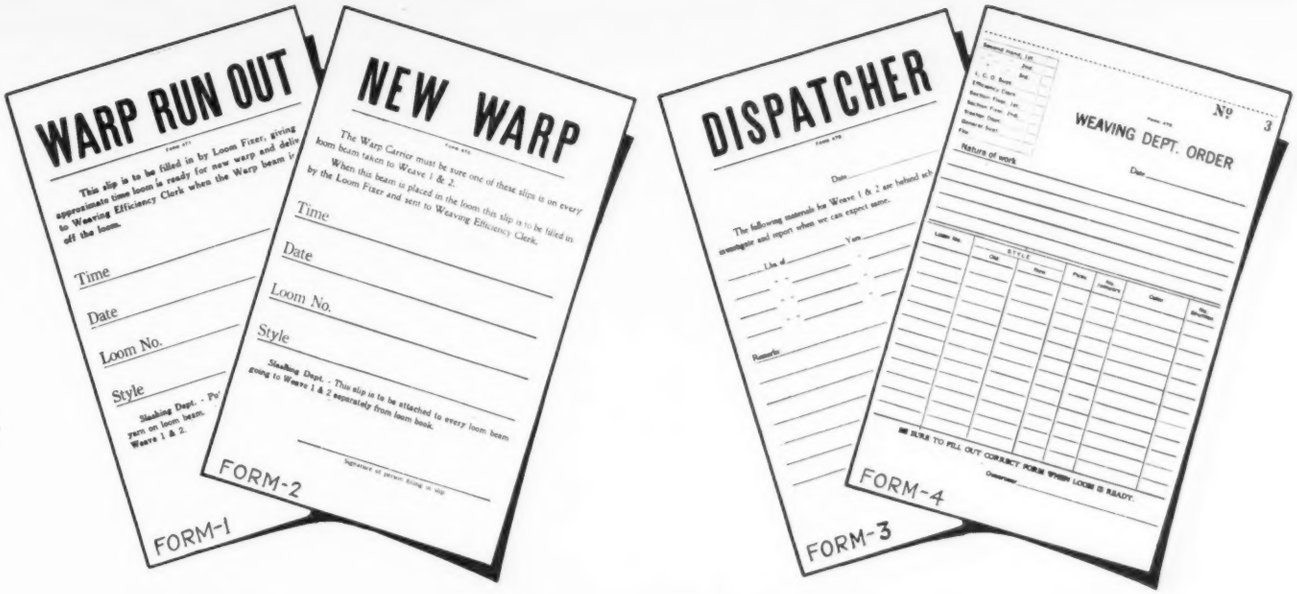
pH Value of Fleece	Pounds of Soda required to bring to pH 10. 1,000 lbs. Raw Wool	Suint only
4·92	8·0	3·0
5·50	5·4	2·4
5·73	10·4	3·6
5·90	12·5	3·8
6·02	7·1	2·7
6·17	7·2	3·2
6·22	8·8	3·6
6·32	8·5	3·1
6·37	8·1	2·9
6·45	6·6	3·5
6·48	7·5	2·7
6·54	7·6	3·1
6·83	7·3	3·2
6·86	7·6	2·7
7·08	5·7	2·2
7·24	5·0	2·2
Avg.: less than 6	9·3	3·4
" 6–7	7·9	3·2
" over 7	5·5	2·2

TABLE II—Test Data

Liquor pH		Total Solids	Grease	Soap	Earthly Matter
		(% of that present in uncentrifuged liquor)			
1	7	53·2	35·5	45·5	84·5
	8	59·9	42·1	65·7	84·9
	10	65·5	42·7	80·0	86·5
	10	66·2	41·8	87·5	78·2
2	7	45·1	33·3	49·4	77·0
	8	49·5	35·0	54·8	72·3
	9	52·0	37·2	55·6	67·4
	10	46·0	33·6	56·6	62·5
3	7	45·0	41·5	46·5	94·0
	8	52·6	43·9	52·6	89·0
	9	56·6	44·5	54·2	88·1
	10	61·7	45·0	59·5	75·0

TABLE III—Grease Relation

Area	Suint, %	Grease, %
Shoulder	12·2	21·5
Midrib	13·4	21·9
Thigh	12·3	22·6
Withers	11·8	21·6
Rump	12·5	21·9
Belly	18·6	13·8



Weave-Shop Efficiency

Records show loom performance and how contract deliveries are being met

By William B. McKay

FACTORS entering into the efficiency of a weave shop on fancies include loom stoppage for changes in style, stoppage while waiting for warp or filling, stoppage due to mechanical trouble, etc. There are two methods of determining efficiency: (1) on contracts of goods sold, and (2) on loom performance.

Efficiency on contract is particularly important in a buyers' market, when it is essential for the mill to make prompt deliveries and at the same time to keep costs down. This is determined by considering that a loom is in production from the time it is ready to weave until the contract is completed, regardless of stoppage or waits of any sort above the normal stoppage included when the standard percentage of efficiency is first set up.

Efficiency on loom performance makes allowances for stoppages not controllable by the overseer, such as waiting for yarns, weavers, or approval of samples by prospective buyers.

The following system has been found to be satisfactory for determining both contract efficiency and loom efficiency:

First, an inventory of each loom is taken by loom number and style. Then the loom fixer is supplied with enough copies of Form 1 to take care of the run-out of warps on inventory in looms and slashed beams ahead of weaving. One copy of Form 2 is attached to each beam on inventory ahead of weaving.

When the slasher starts to wind the yarn on a loom beam, Form 1 is placed

Here is described a practical system for determining efficiency on contract and on loom performance.

With these records the efficiency clerk can determine whether contract obligations can be met.

in the yarn. If the warps can be woven close to the end of the warp yardage, the form should be placed in the second lap. If the warp cannot be woven close, the form should be placed under that lap which will allow it to fall out when the warp has been woven as far as possible. When the loom beam has been filled at the slasher, Form 2 is attached to the outside of the warp.

After the warp is delivered and placed in the loom, Form 2 is removed by the loomfixer (if the yarn is twisted, the twister-in turns the form over to the loomfixer), who, when the loom is ready to start, fills it in, giving time, date, loom number, and style. Then he signs and delivers it to the efficiency clerk.

As soon as the warp is woven up, Form 1 is filled out by the loomfixer, giving time, date, loom number, and style. He signs and delivers this also to the efficiency clerk.

The efficiency clerk holds Form 1 until he receives Form 2 from the next loom beam for the same loom, after which he files Form 1. If, however, Form 2 is not received in a reasonable length of time, he investigates the matter. If the loom is to remain idle, he makes a reduction on his "looms-running report"; if it is waiting for warp or filling, he makes out Form 3, and the dispatcher sees that material is delivered to the loom.

A loom report should record looms running by styles. Therefore, no changes in styles can be made until the overseer's clerk makes out an order (Form 4), a copy of which goes to efficiency clerk, who, in turn, makes out one copy of Form 5 for each loom to be changed. Form 5 is then delivered to the loomfixer, who fills it in after each loom is fixed, and delivers it to the efficiency clerk.

When, for any reason, a warp has to be cut out, an order (Form 4) is made out and sent to the efficiency clerk. He inserts the loom number in Form 6 (one for each loom) and delivers the form to the loomfixer, who completes the filling in after the warp is cut out. The form is then returned to the efficiency clerk.

If the warp cut out is to be rebeamed or redrawn, it is treated as a new warp by the slashing department. The rebeaming, drawing-in, and slashing departments are under the same overseer; therefore, if a warp is to be drawn after leaving the slasher, Form 2 is put on by the drawing-in division.

With these forms flowing regularly to the efficiency clerk, an accurate record by hours can be kept of looms in operation, as well as a record of unnecessary loom stoppage. Thus, a percentage of efficiency can be shown by styles, which facilitates determining whether or not contract deliveries can be met. A further report is made by the second hand regarding looms stopped to wait for weavers, loom parts, or for any reason not recorded on Forms 1, 2, 5, or 6. By adding the second hand's report to the above, one can determine the loom operating efficiency for the benefit of the overseer.

Timing the Pick

Few rayon and silk loomfixers know positively the best positions for shoe and other parts

By John Picone

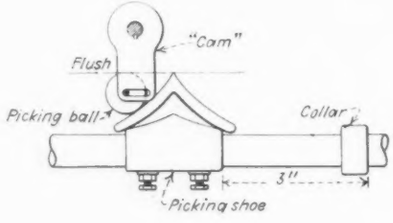
MOST every rayon or silk man who has anything to do with looms has occasion to ask every so often, "What is the proper timing for the pick or power on the loom?" It seems that very few people can state definitely what the exact positions of shoe and other parts should be.

I have studied this problem for a considerable length of time and will offer a picking adjustment which, in my opinion, is correct for most purposes. I think that mills which adopt this adjustment will find in a few days that their production is on an increase and that their fixers are having more time to attend to other duties. As a matter of fact, I have seen looms adjusted in this manner running weeks and weeks without requiring any attention whatever.

The first step is to observe the position of the shoes and measure their distance from the collar of the pick-shoe shaft. This measurement from collar to shoe should be 3 in., as indicated in the diagram.

Our next step is to move our picking-ball stud as far back in the picker cam as it will go, in order that adjustments can be made later if necessary.

Now turn the loom over and adjust the picking-ball cam so that the picking ball rests flush with the outside of the



picker shoe, as shown. If this is not flush, we have the picking balls chipping and wearing the pins.

I might hear many criticisms of the next moves, but nevertheless I am positively sure of the results obtained.

Turn the loom over until the pick begins. The crankshaft should be slightly over dead top center. In the majority of cases it will be found that the crankshaft is top center or a little before top center. We then must jump one or two teeth in our big driving gear which meshes with the gear on the crankshaft. (Most often we jump only one, but I have found that there are cases when we are compelled to jump two.) For every tooth jumped on the big gear, there is a difference of about ½ in.

Now then, here is the trouble. When we jump our big gear, we naturally throw our box motion out of time. Many of my readers are going to say that the loom company puts keys in the egg-shaped driving gears of the motion. That is true, and there is a reason for it. After the big gear has been jumped one or two teeth, it is necessary to drive one of the keys out of these egg-shaped gears so that the box can be put in proper time. This is done by just inserting a screwdriver between the gears and turning the loom to exact position. After the key has been driven, I suggest that a round-nose cup set screw be obtained and that this be worked back and forth until it grips in the shaft of the gear.

After this has been done, I recommend that the sweepstick be let out in the picker arm and the hold-up raised until it is level with the sweep stick.

The loom is now ready to start, and I am positive that it will prove to be a decidedly different loom both in smoothness of running and in upkeep. With this adjustment one will not have the shuttles forcing their way through the shed, but going in a smooth and easy manner.

In a later article I shall go into this matter in more detail in conjunction with the subject of "Looms Banging Off."

The goods are rinsed first with warm and then with cold water

Ewing Galloway

Careful preparation of goods will prevent cracks and other defects in

Finishing Fancies

By G. L. Atkinson

DUE to the fact that the two fibers react differently to various processes, it is rather difficult to obtain a uniform finish, with a full, soft handle on fancies containing both wool and rayon. Cracking is a fault which is likely to occur if the initial processing of the goods is not carried out properly, and this is a defect which it is almost impossible to remedy. In shearing, one must see that the goods are clean cut without being cut bone clean, which is apt to make them harsh and papery. Other precautions which should be taken will be noted in the following discussion of a finishing routine which the author has found suitable for this type of material.

These fabrics usually are about 56½ in. wide in the gray, and 54 in. finished. Weights vary from 6 to 12 oz. per yd. As the majority of these goods are intended for women's wear, they are generally required in rather light and delicate pastel shades, with some navies and blacks.

As a rule, fancies of the type under consideration do not contain many weaving imperfections. They should be perched in the gray room, however, so that all stains can be removed before the cloth is put in process. After perching, the pieces are sewn together in batches of eight to ten pieces, a crabbing wrapper 8 to 12 yd. long and 60 to 65 in. wide being attached to each end of the batch. The goods should then be beamed on a wooden shell, just enough tension being used in beaming to avoid wrinkles or creases.

Crabbing and Steaming

Excessive tension and pressure should be avoided in handling these fabrics, particularly in the preliminary operations. This means that setting must be accomplished by other means than running the goods under heavy tension in the crab. For crabbing, the writer prefers a three-bowl machine. The wrapper is threaded through the tension device of the machine, over the guide roller, and around the first crabbing roll. A little soap solution is added to the bowl, the liquor brought to the boil, and the steam turned off. Any slack in the wrapper is taken up by turning the crabbing roller by hand. Neglect to do this may cause whipping or jumping of the pieces when the crab is set in motion, with disastrous results to the goods. The machine is now started and the goods are run on the crabbing roller, just enough tension being applied to prevent formation of creases in the cloth. The liquor is again brought to the boil, and the pieces are allowed to revolve in the solution for 2 to 3 min. The same procedure is followed in the running of the goods in the second and third bowls.

Crabbing is followed by steaming on a blowing and steaming machine. Steam pressure should not exceed 10 lb., and the steaming can should revolve throughout the operation. After steaming, the goods are cooled by running first through warm and then through cold water, and the wrappers are removed.

Scouring

In scouring, heavy rollers should not be used, and the pressure on the rolls should be as light as possible. The temperature of the scouring solution should be kept down to the lowest point which will give a thorough scour. During scouring, the goods should be well drafted out. The exact temperature and time required for scouring will depend on the type of machine, the construction of the cloth, and the composition of the scouring solution. When scouring is completed, the goods are rinsed first with warm and then with cold water, dyed, extracted, and dried. The chief precaution to be observed in drying is to avoid over-drying or baking of the fabric, which often results in an undesirable, harsh finish.

Shearing

Shearing is carried out on a hollow- or spring-bed machine, giving three cuts on each side. Sometimes an extra cut will be needed on the face. As mentioned at the start, a good clean-cut finish is wanted, without going so far as to make the goods harsh and papery.

Shearing is followed by perching, after which the pieces that are up to standard are ready for the final finishing operations. The first of these operations is decating. The goods are run onto the decating machine under just sufficient tension to remove all creases, steamed thoroughly, and run off at steam heat. No cooling should be attempted on this type of material.

Next, the pieces are sewn together, care being taken to keep the face of the fabric up. The goods are now tentered, the machine being set at about ¼ in. over the desired width at which the fabric is to be delivered from the tenter. Finally the goods are pressed lightly.

The procedure described above will keep cracks and other faults to a minimum. Likewise, it will result in the soft, yet firm, and full, finish required on this class of goods.

New Mill on

Turner establishes largest tubular-

JACK TURNER was born 33 years ago in the city of New York. When sixteen years old he began work in a small knitting mill on Broome St. A year later he took a job as mechanic with the now deceased Lubinette Knitting Mills. Four years afterward he set up a knitting department for an underwear manufacturing company, now known as Belle Knitting Corp.; and, when that concern decided to participate in the general exodus from New York, he went with it to Lebanon, Pa., and later to Sayre, Pa., helping it, as superintendent, to grow from a six-machine mill to almost a 400-machine mill.

But Jack Turner always hankered to get back to New York. Like most other men, he also wanted to have a business of his own. Both desires were satisfied late last year when he became president of Apex Knitted Fabrics, Inc., 707 Broadway, a new concern specializing in cotton knitted fabrics. It is, by a considerable margin, the largest manufacturer of tubu-

IN upper left is shown the building at 707 Broadway in downtown New York which houses Apex mill on seventh floor. This floor may be identified by the line of windows slightly more than half way up the side of the building

ABOVE, in center, is Jack Turner, president of Apex Knitted Fabrics, Inc., seated in his new office

AT right is the Tompkins department of Apex mill, which specializes in cotton knit fabrics

AT right on opposite page is shown one of the Wildman machines (at left) and the large battery of Scott & Williams knitters on each side of aisle

Broadway

knit cloth plant in New York

lar knitted cloth within the confines of New York City.

Weingart Is Treasurer

Treasurer of the new corporation is Herman Weingart, president of Silverod Mfg. Co., New York, a prominent children's-underwear concern which takes 40% of the Apex output.

On Nov. 18, 1936, production began at Apex on the few machines then installed. The total initial installation, just completed, consists of 94 machines, of which 42 are Tompkins spring-needle machines, 40 are Scott & Williams latch-needle ribbers, and twelve are Wildman spring-needle machines. The range of cylinder sizes permits the manufacture of fabric for both children's and adults' underwear. Swiss-rib and tuck-stitch fabrics are made. Some of the product goes into men's athletic underwear and polo shirts and some into women's pajamas. All fabrics are primarily cotton, but rayon is used to a limited extent for decoration—for example, on one feed of an eight- or twelve-feed Scott & Williams ribber. Productive capacity is 45,000 lb. per week; and even while the work of building up to this capacity was going on, the mill was working day and night and has already turned out some 160,000 lb. of fabric.

Auxiliary Equipment

The plant occupies the entire seventh floor of a building bounded by Broadway on the east and Mercer St. on the west, just south of Washington Place. The floor space occupied amounts to 12,000 sq.ft., and there are windows on all four sides. The building is sprinkler equipped, and an American Moistening humidification system is now being installed on the mill floor to be operated by an Ingersoll-Rand air compressor. At present a portable Monogram Electric ½-hp. air compressor is being used for cleaning machinery. The lighting system consists of RLM domes spaced 25 ft. apart along the aisles.

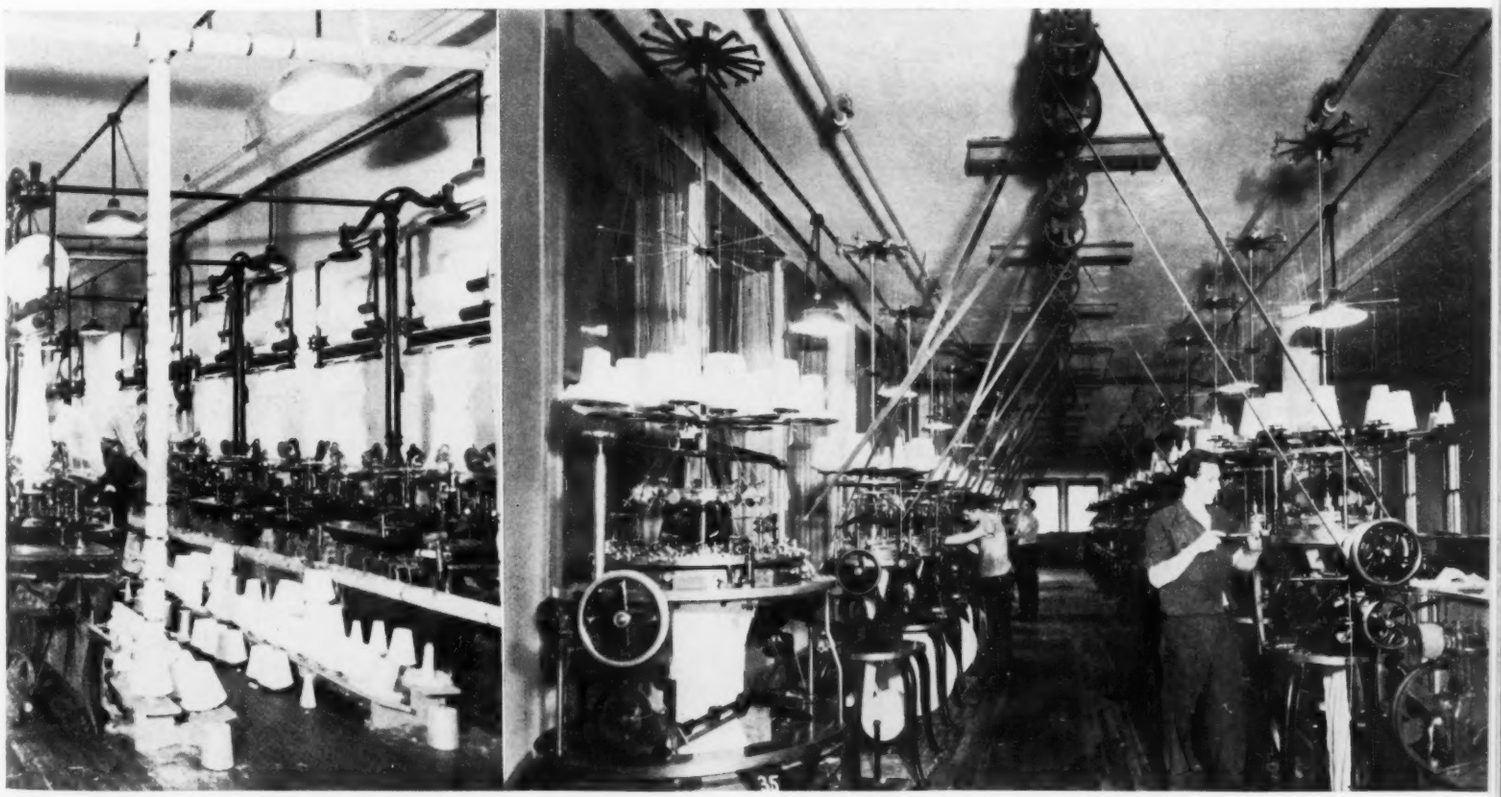
A machine shop is now under construction, and the molding of Tompkins needle leads is already being undertaken on a table equipped by the mill for electric heating. A Curtis & Marble illuminated-glass inspecting and measuring machine is now in operation, and a testing laboratory is to be constructed later. A 7-hp. gas-heated automatic Kane boiler supplies steam to the Tompkins machines for conditioning rayon, and this is fed from a 200-gal. tank and a 300-gal. reserve tank.

The Scott & Williams machines are equipped with the new adjustable cloth-spreaders and with the recently developed take-up which utilizes the increasing weight of the roll to maintain uniform tension on the fabric as the roll winds up. These machines are also equipped with the Crawford electric stop motion, an efficient device developed only last year.

Combed and Double-Carded Yarns

Apex uses high-grade combed and double-carded yarns from such spinners as Corriher Mills Co., Landis, N. C.; Linn Mills Co., also of Landis; and Cross Cotton Mills, Marion, N. C.

Jack Turner sees several advantages in his New York location. The most obvious one, of course, is his proximity to many knit-fabric buyers who want prompt delivery out of stock. Also, New York is a convenient place from which to ship to any part of the country. Again, the exodus of knitting mills from New York has left the city with a surplus of experienced knitters who require no training and who, in general, are superior to those available in the more isolated towns. Mr. Turner finds that neither wages nor rents are higher in the city.



Seamless Fashion Marks

And size marks in loose-top stockings made with special right-hand stitch cam

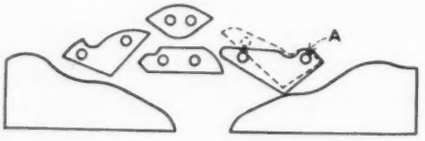
By George E. Cottrell

Consulting Knitting Engineer

SOME ten years ago the writer went through the ordeal of making an out-size hose on a Scott & Williams model-K machine which was equipped with a fashion-mark attachment. The specification for this hose called for an elastic top made of heavier yarn, and it was to have a 14-in. stretch. The foot and ankle were to be made as tight as possible. Now this extreme variation from looseness to tightness presented a problem in getting the fashion marks to show in the tightest part of the hose. This was especially true of the size marks which were to be placed in the sole.

It was obvious to me that, if I could get this wide variation of tightness and looseness without too much difference in the cylinder height, the problem would be simplified. The first thing I did was to experiment with the sinker-ring setting. I found that if the sinker wave and the needle wave, at the point where yarn was being drawn to form the stitch, coincided, it required very little difference in the height of the cylinder to get the desired effect.

The setting of the sinker ring was this: When a given needle was at its



lowest point, drawing yarn for the stitch, the corresponding sinker should be at its inmost point. This adjustment was made with the bumper screw on the sinker-cam ring.

After I had made the above adjustment, I found that I was still not able to keep tuck stitches from appearing in the loose top and at the same time have well-defined size marks in the sole. To overcome this difficulty, I made a special right-hand stitch cam, of such shape that, when it was in its lowered position, the needles would be raised only high enough to clear the screw hole *A* shown in the accompanying sketch. This allowed the ends of the latches of the fashion needles to remain in their loops, while the other needle latches cleared their loops sufficiently to make clear knitting. Now this special right-hand stitch cam, as may be seen in the sketch, would at its uppermost position raise all the needles high enough so that even the fashion needles with their longer latches would clear their loops enough to make clear fabric in the loose hem part of the hose.

This special right-hand stitch cam must be carefully fitted so that it will swing freely as it moves from its low to its high position. The other parts of the fashion-mark attachment must also be checked so there is enough movement to give the right-hand stitch cam its full motion. The special fashion-mark chain links must also have lugs of precise height, in order that the ends of the latches of the fashion needles will be at their proper level while making the tuck stitches.

These special right-hand stitch cams may be obtained from the machine manufacturers, who also have an attachment which is very effective in producing the elastic top.

Fabrics for Plastics Range in weight from 3 to 18 oz.

THE rapidly developing plastics industry requires the use of a number of textile materials to impart characteristics which are unobtainable by any other means. In general, plastics are divided into two groups. In the first group, the identity of the textile filler is lost entirely, and a new, hard, solid product is obtained; in the second group, the identity of the fabric is altered partially to impart new, desirable properties. Cotton or silk flocks are used in the first, or molded, group; whole textile fabrics are utilized in the second, or laminated-plastics group.

The following list of the principal fabrics used by the laminated-plastics industry will serve as a guide to textile manufacturers wishing to sell to that field. Fabrics for the laminated-plastics manufacturer range all the way from fine organdies to heavy ducks, and there has been no standardization. The cloth

By J. Delmonte

is unsized in every case, as resin impregnation is thus rendered less difficult; and it is unbleached unless otherwise specified.

Weights run all the way from 3- to 18-oz., and the following is an example of the stocks carried by one prominent laminated-plastics manufacturer: 3-oz., unbleached, 96x102; 4-oz., 80x80; and 8-oz. duck, 60x60, double filling. Widths required range from 36 to 48 in., according to the size of presses used by the plastics manufacturer, most companies having standardized on 48-in. fabrics.

Among other typical textiles used by the laminator are 8-oz. Army duck, airplane cloth, twills, single filling duck, etc. In general, the finer-weave fabrics are made into the thinner laminated sheets, which require a certain degree of resiliency. For heavier stock, such as used in gear blanks, a heavy grade of canvas is required.

It is interesting to note incidentally that laminated plastics are used to manufacture loom pickers and rayon spinning pots and that they have found many other applications in general equipment.

MACHINERY FOR 22.5s Tire Yarn SIZE OF MILL 20,000 Spindles

1 OPERATION	2 SIZE	3 WASTE %	4 STOPS %	5 TOTAL POUNDS	6 LB. PER UNIT	7 UNITS	8 SPEED	9 MACHINES	10 DETAILS	11 LENGTH	12 WIDTH
Spinning	22.5	2	9	7,600	0.38	20000	9,075	80-252	$3\frac{3}{4}$"gg 2"R	41'-10"	3'-3"
Fine	4.50	1	7.4	7,755	1.85	4,192	1,150	26-160	7x3½	38'-3"	3'-4"
Inter.	1.50	1	16	7,833	7.20	1,088	950	10-114	9x4½	36'-6"	3'-6½"
Slubber	0.55	1	20	7,912	21.23	373	650	6-64	12x6	29'-11"	6'-10"
Drawing	65	0.5	20	7,992	151	52.9	280	3-3-6	$1\frac{3}{8}$" Com.	30'-5¾"	5'-11"
Drawing	60	0.5	20	8,032	150	53.5	300	3-3-6	$1\frac{3}{8}$" Com.	30'-5¾"	5'-11"
Comb	55	15	5	8,072	112	72.1	120	72	D-2	17'-5"	3'-6"
Ribbon Lapper	4.74	1	25	9,497	1,197	7.94	90	8	–	12'-0"	4'-5¾"
Sliver Lapper	4.74	1	25	9,593	1,197	8.01	90	8	–	10'-9"	4'-3"
Card	55	7	10	9,690	86.5	112	7	96	27" Doffer	10'-6"	5'-4"
Picker	12.5	2	10	10,419	3,130	3.3	945	4	–	49'-0"	6'-8"
Vertical	–	3		10,651	15,000	1	–	1	–	9'-8"	5'-7"
Vertical	–					1	–	1	–	9'-8"	5'-7"
Bale Breaker	–	5		10,998	15,000	1	–	1	–	33'-9"	6'-10"
				11,577							
Winding	22.5	1	35	7,524	24.3	310	1,200	1-216 1-144	Type C	62'-9¾" 48'-8"	9'-0"
Warping	22.5	1	44	7,449	6,400	1.2	900	2	400 End VW	25'-0"	18'-4"
Twisting (5 Ply)	22.5/5	1	8	7,374	1.33	5,545	5,700	35-160	5"gg 3½ R	35'-9½"	3'-3"
Twisting (3 Ply)	22.5/5/3	1	10	7,300	5.00	1,460	3,150	12-124	7"gg 5½"R	38'-7½"	3'-6"

Tire Yarn . . .

How much machinery do you need to produce 7,600 lb. of 23s in ten hours?

By Gilbert R. Merrill
Lowell Textile Institute

THE organization for 23s tire yarn shown in the table is the first to introduce combing, with the accompanying operations of the silver lapper and the ribbon lapper. The organization is based on the use of light laps, as is necessary for the Heilmann type of comb, usually Whitin D-2 in this country. While these combs are not being sold today, there is such a predominating quantity of them still in use that they should not be neglected in a study of this sort.

The general procedure here is exactly the same as in the calculations for the 13s and 22s machinery, as given in the January, 1936, issue. This organization is so much like that for the sheeting filling that the only discussion given is for such operations as differ from the 22s.

Cotton used for this quality of yarn would be of a fairly high grade, and two opening machines would supply enough cleaning. Slow carding is a prerequisite for good combing. Lapper speeds have been taken as 90 r.p.m. in each case and may be increased to 100. However, this would not make much difference in the equipment needed.

The D-2 comb, at 120 nips per minute, is near its maximum speed, but still gives a very low production. If some of the newer combs were to be used, the production would be increased about 50% which means that only about 48 combs would be necessary.

As combed cotton for this work would probably be from $1\frac{1}{8}$ to $1\frac{3}{16}$ in. long, $1\frac{3}{8}$-in. drawing rolls would be practical. Common rolls have been selected because they are more likely to be found on combed work than on carded work. The use of common rolls reduces the pounds per delivery to about 150, as compared with 193 lb. in the 22s organization.

Note that the pounds per spindle are the same as for the 22s, even though the spindle speed in this case is 1,000 r.p.m. higher. This is because the twist is so much greater in the tire yarn.

Making the yarns into the finished cord involves winding and twisting operations. Ordinarily, the single yarns are spooled or wound to get long lengths on one package, and then the single ends—enough for half a frame in most cases—are wound on a section beam.

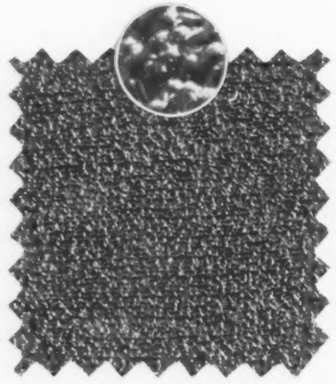
A beam twister makes the first strand, five ply, on spools about 3x6 in. In some cases, these spools go directly onto the pins of the second twister creel; in other cases, several spools are rewound into one package to give a long length in the second twister creel. The second twister, making three ply (of the five ply), often uses a spool 5x8 in.

The calculations for the winding and warping are based on high-speed machines. Both twisting operations are calculated on the basis of ring twisters.

THIS IS the second article in which Professor Merrill discusses the amounts of machinery necessary to keep a spinning mill in balance. Organizations for a print-cloth mill and for a coarse-sheeting mill will follow in future issues.

Thorough scour is necessary to insure even dyeings on

Knitted Rayon Plush



By L. A. Jordan

KNITTED rayon plush fabric can now be produced so effectively that it rivals in appearance and handle much of the woven plush. The better qualities of knitted plush have a peculiar softness of handle which is seldom obtained in woven goods. This is because the surface of the knitted fabric consists of uncut rayon loops standing out from a cotton backing, while in the woven material the loops are cut. It is probably for the same reason that a knitted plush fabric is usually much less susceptible to creasing than a woven plush.

Although knitted plush in its finished condition is highly resistant to creasing, it is unfortunate that during wet processing this fabric can easily become permanently creased so that its appearance is ruined. Also, wet processing must be carried out in such a way that no great pressure is exerted on the plush side of the fabric, since this is likely to crush or distort the knitted loops and thereby rob the fabric of its uniform, smooth appearance.

In dyeing, the cotton and rayon must be brought as nearly as possible to the same tone and depth of shade. For this reason, the scouring process which precedes dyeing must be efficient. In general, cotton dyes to a paler shade than viscose rayon, this being particularly true if the cotton is not thoroughly freed from its natural waxy and water-impervious impurities.

Scouring Procedure

Scouring is most conveniently carried out by running the fabric in tubular form in a reel machine for about 1 hr. in a boiling solution containing soap and a small amount of soda ash. Addition of a wax-emulsifying agent is recommended. In this way, most of the pectic and waxy impurities are removed from the cotton, while at the same time, the rayon is thoroughly freed from gelatine sizing compounds.

Most fabrics of this type are dyed in maroon, dark green, navy blue, brown and similar dark shades, so that bleaching is not often required before dyeing. Occasionally, however, very clear orange and sky-blue shades are demanded, and then the fabric must be bleached. In no case, should the bleaching be prolonged more than is barely necessary. In connection with this, it should be remembered that the wearing surface of the plush fabric consists almost entirely of rayon loops; and, if these are weakened in bleaching, the appearance of the fabric rapidly begins to suffer during use.

In the scouring, bleaching, and dyeing operations, it is essential that the plush side of the fabric be on the inside. Under these conditions, there is little possibility of the rayon loops becoming caught on small projections from the machines. Also, any stains which are picked up will then be mainly on the back of the fabric and, therefore, less noticeable.

Direct Dyes Used

Following bleaching, the fabric is dyed in a reel machine with direct dyes selected as far as possible to give equal depths of shade on different qualities of rayon, and also to give the same tone of shade on both cotton and rayon. In general, it will be found that direct dyes which have a strong affinity for cotton in a cold bath are most suitable.

Dyeing is carried out at the boil using a soap liquor. Experience has shown that there should be present in the bath 2 to 3 lb. of a good quality soap for each 100 gal. of water. Softened water is very desirable; but if hard water cannot be avoided, it is advisable to add a water-conditioning agent, such as sodium hexametaphosphate, or to use one of the newer dyeing assistants which do not form insoluble lime soaps. Boiling during dyeing is essential for two reasons: first, penetration of the dyes through the cotton backing of the fabric to the rayon-plush surface is facilitated; and, second, different qualities of rayon which may be present are more likely to be dyed to the same depth of shade.

Unfortunately, dyeing at a boiling temperature does not favor the production of equal depths of shade on both the cotton and the viscose. This is especially true with dark blue and green shades. In pale shades, no difficulty is met with on this count. Usually, the cotton is dyed much lighter than the rayon. To overcome this, the dyebath should be cooled to a lower temperature, of say 105°F. In some cases, it is necessary to reduce the dyebath almost to room temperature in order to bring the shade on the cotton up to that of the rayon.

Plush fabrics of the type under consideration can be washed without seriously injuring their original appearance, although in actual use they are not often washed. As a rule, these fabrics are dyed with colors of only average fastness, and it is recommended that they be aftertreated with one of the compounds which will increase the fastness to washing.

Tentered and Brushed

Following dyeing, it is necessary to finish the fabric so that the plush is left smooth and lustrous. This is best carried out by tentering the goods with the plush surface up, so that it can be lightly brushed with a hair brush extending across the fabric. This brushing causes the loops to lie in one direction. When no tenter is available, the tubular fabric must be turned so that the plush side is out. It can then be dried (with an internal spreader) on a vertical hot-air dryer. This method does not yield quite as desirable a plush surface as when a tenter is employed, but, with careful control of the tension on the fabric, good results can be obtained.

A soft finish is always required on this type of fabric, even though the cotton back tends to give firmness. This slight firmness can be overcome by treating the fabric with a softening agent before drying and finishing.

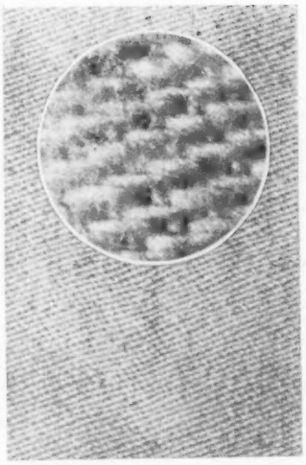
Recently, there has been noticed an increasing tendency toward knitting the fabric entirely of rayon. Such fabrics are extremely soft in handle, and drape well. The finisher should have a much easier time processing an all-rayon knitted-plush fabric, since the scouring need not be so drastic as with a cotton-rayon fabric, and dyeing difficulties are largely eliminated.

Staple Cotton Fabrics

By John Hoye

Fabric Technician,
Iselin-Jefferson Co., New York

SATEENS, the third of the foundation weaves, are taken up by Mr. Hoye in this, the fourteenth, instalment of the series on staple cotton fabrics.



Iselin-Jefferson Co.

5-Leaf Filling Twill
40", 54x72, 1.61 yd.

FIVE-LEAF FILLING TWILL

FIVE-LEAF FILLING TWILLS are heavy, carded-yarn, filling-face twills which are often used in place of moleskins.

Finishes used: Usually dyed with sulphur colors and napped on the back to give a "moleskin" finish.

Uses in finished state: Pants, jackets, sheepskin-lined coats, etc.

Warp yarns: 12s to 14s.

Filling yarns: 8s to 9s.

Examples of five-leaf filling twills:

34"	54x72	1.90
40"	54x72	1.61
40"	54x72	1.40

•

Sateens

SATEENS are cotton cloths made with a satin weave. This is the third of the foundation weaves and produces a long, smooth float, with the intersections or binding points as far apart as possible in order to avoid a bold twill-line effect and to present as smooth and solid a surface as possible. The more perfect the distribution, the more even and smooth the fabric will be. Cotton sateens are made with five or eight harnesses. The five-harness weaves are known as either *warp sateens* or *filling sateens.* The eight-harness sateen is warp faced and is called a *Venetian.*

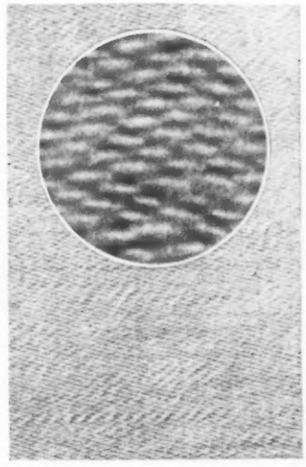
FILLING SATEENS

FILLING SATEENS are usually not so strong as warp sateens; but, filling yarns having less twist than warp yarns, they have a smoother, softer surface. In finishing, such as schreinering, the surface takes a high, lustrous finish, even on the carded-filling sateens. For this reason, filling sateens are generally used for linings, trimmings, underwear, and other uses where lustrous appearance and softness are desired. The combed-yarn-filling sateens give an improved, soft, silky appearance; especially when mercerized and schreinered.

In filling sateens, each pick interlaces with one warp end and then floats over four ends to each repeat of the weave. Five harnesses are used, and the movement is known as one up and four down. Two types of fabric are made, according to the manner in which the harnesses are lifted and lowered. If the order of lifting is two, five, three, one, four, the result is a *smooth-face sateen.* If the lifting plan is four, one, three, five, two, a *twill-face sateen* is obtained, provided that regular-twist filling yarn is used. Filling sateens are usually made with a smooth face; but, if the repeat of the weave runs to the right, a twill-line effect is produced because the weave line coincides with the direction of the twist in the filling yarn. Twill-face sateens are usually made in only the lowest constructions.

If mule-spun filling yarn is used, the cloth appears fuller, has more cover, and finishes with greater luster than cloth made with ring-spun yarn.

Finishes used: Embossed; messaline; mercerized; schreiner; chintz; imitation mercerized; firm starched; usually dyed; also printed with designs suitable for draperies, cretonnes, dress goods, and comfortable covers.



J. W. Valentine Co.

Filling Sateen (Carded, Smooth Face), 37½", 64x104, 4.37 yd.

Uses in finished state: Underwear, pajamas, bloomers, slips, smocks, dressing gowns, bathing suits, blouses, shirts, theatrical costumes, dresses, hat linings, coats, draperies, cushion covers, pocketbooks, bedspreads, draperies, umbrellas, parasols, comfortables, blanket bindings, quilts, and waistbands.

Warp yarns: 28s to 44s carded, 50s to 60s combed

Filling yarns: 34s to 50s carded, 50s to 70s combed.

Widths: 26, 31½, 37½, 39, 43, 54 in.

Constructions: 64x72 to 84x112 carded, up to 96x180 combed.

Examples of filling sateens:

Carded

26"	64x72	7.00	43"	64x104	3.85
37½"	64x72	5.25	54"	64x104	3.03
31½"	64x88	5.50	39"	64x112	4.00
37½"	64x88	4.70	43"	64x112	3.65
39"	64x96	4.25	39"	72x120	2.70
37½"	64x72	5.25*	39"	72x120	3.50
37½"	64x88	4.70*	43"	72x120	3.35
37½"	64x104	4.37	41"	72x136	2.10
39"	64x104	4.30	38½"	84x136	4.90

Combed

39"	96x132	3.75	39"	96x160	4.50
43"	96x132	3.35	39"	88x140	5.10

* Twill face

. . . Free . . . For the Asking

READERS interested in the catalogs and other useful literature reviewed on this page, may secure copies by writing to TEXTILE WORLD, 330 West 42d St., New York.

Chain Drive. Link-Belt Co. 96-page 1936 edition of data book No. 125 covers complete data on chains and wheels, including lubrication, parts, dimensions, prices, etc.

Safety. National Safety Council. Folder describes progress made toward increased efficiency through safety in various industries.

Arc Welding. Lincoln Electric Co. New, enlarged edition of "Lessons in Arc Welding," comprising 130 pages and presenting 44 lessons in arc welding.

Winding. Universal Winding Co. 12-page illustrated folder describes construction, maintenance and diverse uses of Roto-Coner, with particular reference to special winding procedures.

Humidification. Foxboro Co. 40-page bulletin considers instruments and application methods for humidity control in wide range of industrial drying and processing operations.

Power Pumps. Fairbanks, Morse & Co. 12-page illustrated folder, with photographs and dimension charts, describes characteristics and applications of power pumps. 14-page booklet illustrates and describes present models of Fairbanks-Morse Diesel engines.

Motors. Century Electric Co. 8-page illustrated folder presents characteristics, services, and past achievements of company's line of brush-lifting, single-phase motors.

Meters. Cochrane Corp. Two 16-page staple-bound booklets: First describes construction and special features of company's mechanical flow meter, giving pressure and temperature charts; second describes basic requirements of complete deaeration, and tells how company's feedwater deaerators operate to meet such requirements.

Steel Strapping. Acme Steel Co. "My Second Strap" by "Doc. Steelstrap" comprises 10 pages of useful information on general shipping problems and includes case histories where savings have been effected; designed to supplement the preceding issue.

Pulverized-Coal. Babcock & Wilcox Co. Booklet contains story of direct-firing, pulverized-coal system from bin to burners, citing uses and advantages of company's direct-firing system.

Metals. International Nickel Co. Two illustrated four-page folders: First describes use of company's product in plant of Bertram Goldberg, Inc., knit fabric finishers; second use of product in and about finishing plant of Maupai Dyeing Co.

Socket Screws. Holo-Krome Screw Corp. 38-page, illustrated, two-color catalogue, includes tables, data, standards and other information on company's line of fibro-forged socket screws.

Welding. Lincoln Electric Co. Two folders: First describes specifications, uses, etc., of company's Shield-Arc SAE welder, belted or direct-driven models, second describes d-c. motor-driven models.

Industrial Lighting. Benjamin Electric Mfg. Co. Thirty-six-page handbook discussed 30 common lighting problems, with diagrams, and equipment specifications for the solution of each of them.

Testing. A. Wyzenbeek & Staff. A 5-page circular tells how guesswork is eliminated by use of company's precision wear test meter, which subjects fabric samples to an abrasive test and records the results.

Steam Generation. Detroit Stoker Co. A 15-page booklet reviews progress of economical steam generation in Southern locations, with specific reference to installations at May Hosiery Mills and other textile plants.

Shipment. Railway Express Agency. Pamphlet, "C.O.D. by R.E.A.," describes functions and advantages of company's C.O.D. service.

Lighting. General Electric Co. 35-page bound bulletin contains articles on office lighting with particular relation to optical efficiency.

Shipping Packages. Lewis-Shepard Co. Illustrated folder discusses reducing costs for light loads by use of company's equipment for handling barrels, drums, carboys, cartons, etc.

Agitators. New England Tank & Tower Co. 75-page bulletin No. 370, describes company's complete line of agitating equipment, and includes new handbook and data section containing original data for the technician.

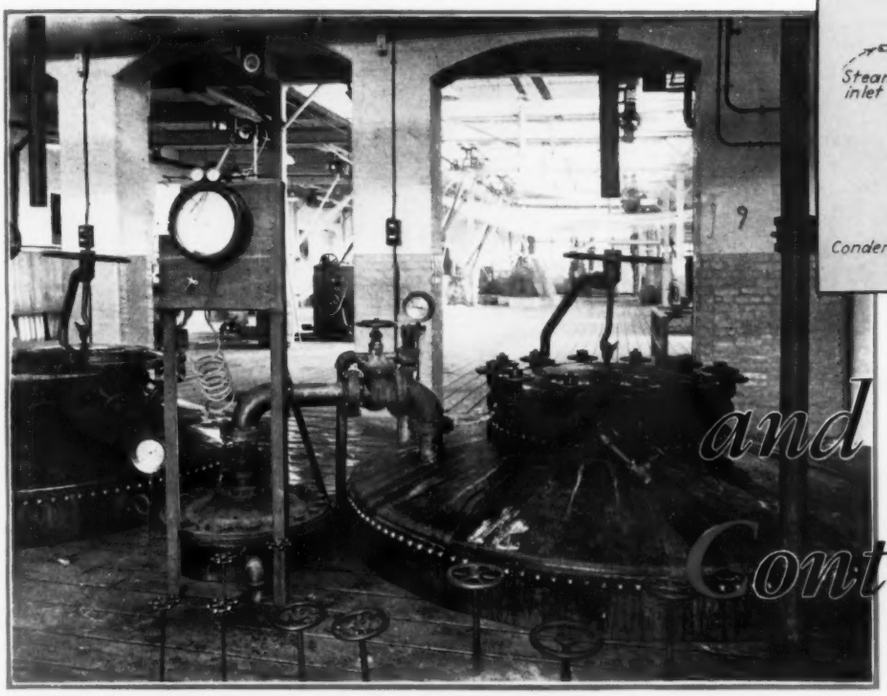
Yarn Dryer. Proctor & Schwartz, Inc. Illustrated folder No. 69, describes company's new automatic yarn dryer equipped with exclusive new traveling skein protector; particular reference to features, uses and possible economies of this equipment.

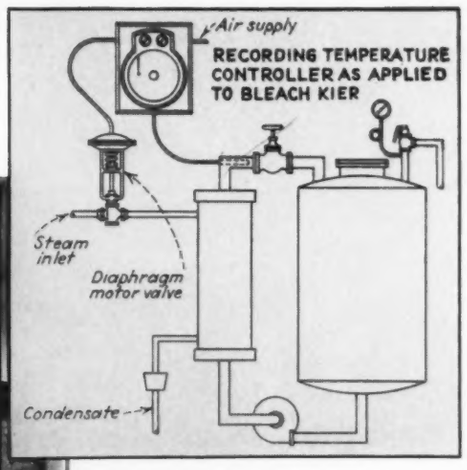
Hosiery Forms. Textile Machine Works. Folder describing hosiery display forms for showing stockings to the consumer.

Flood lights. Crouse-Hinds Co. An elaborate catalog covering all phases of floodlights.

Miscellaneous. Recent issues of manufacturers' publications containing items having a textile slant are as follows: *Rayon Warp Sizing Specialist* features article on warp sizer temperature control and items on silk system vs. cotton, etc; *Bakelite Review* includes article on hosiery quality determination by F. K. Fogleman, Textile Machine Works; *Dyestuffs* discusses fugitive tints, wool dyeing, flameproofing, hand block printing of silk, and umbrella cloth dyeing; and reprints staple-rayon dyeing article by L. A. Jordan from TEXTILE WORLD, (Aug. 1936, p. 69); *Saco-Lowell Bulletin* has articles on rehabilitation of tornado-wrecked mill, staple-rayon processing, cotton spinning, etc.; *Vanadium Facts* tells how knitwear stitches are regulated by alloy steel design wheel; *Sizing News* features article on sizing and desizing viscose and acetate warps, and other items on Kem Products Co. line; *Parks Parables* reviews history of air-conditioning development in textile industry; *Hyatt Rollergravure* contains photograph showing use of company's product in Riggs and Lombard continuous cloth washer; *Making the Grade with Wool* has articles on "Wool Goes with Skiis," "Glass Yarn," etc.; *Rockwood Drives* tells of vertical drives used in Glen Woolen Mills.

Regulators—and Controllers





Understanding of types and characteristics is necessary to correct application in textile mills

By E. H. Hammond

Chief Instrument Engineer
Consolidated Ashcroft Hancock Co.

FROM control equipment already installed, mill owners and executives are coming to appreciate the value of instrumentation as a means of increasing production, improving quality, and lowering costs. As a result, a growing number of control installations are being made in textile mills. It is highly important, however, that instrumentation be properly applied and that provisions be made for adequately servicing and maintaining the instruments at the highest level of operating efficiency.

Actually, the modern condition controller is not complicated, and the skilled textile operator or maintenance man will not find it difficult to operate or service. The trend in the bigger textile plants will be to establish separate instrument departments, charged with the full responsibility of specifying, installing, and servicing instruments and condition controllers. The smaller companies must depend on the instructions and service supervision offered by the instrument manufacturers until such time as some person in the organization demonstrates the ability and talent to handle the company's instrumentation problems.

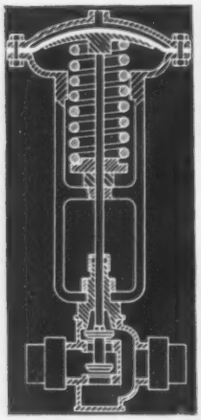
Unfortunately, it is difficult for textile mill men to obtain complete or specific data on the subject of instrumentation. Published information is widely scattered, and much that has been written is merely descriptive of an installation or method of control, without dealing with the control principle involved. The purpose of this article is to discuss the application of automatic control in the textile industry, to describe the functions of some of the more common forms of condition controllers, to define and illustrate terms and characteristics, and to suggest a standard nomenclature as applied to condition controllers.

In the order of their importance, the physical conditions requiring control in the textile industry are temperature, humidity, pressure, liquid level, and steam flow. Almost all industrial condition controllers can be placed in one of four following general classifications: (1) self operated, (2) pneumatic operated, (3) hydraulic operated, and (4) electric operated.

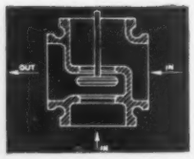
Of these four general types, the hydraulic operated finds little application in the textile industry and will not be considered further in this article. The classification of "Electric Control" is quite broad and is used here to include all types from the simple room thermostat to the most intricate motorized control, as well as special types, such as photo-electric operated and those depending on the radio principle for operation. Some of the simpler forms of electric controls are used in the textile industry; but these applications, as a rule, are limited to air-conditioning equipment, to applications where compressed air is not available, or to applications where a self-actuated controller might not be suitable.

By far the greater number of applications in the textile industry will involve self-actuated and air-actuated condition regulators and controllers, and the balance of this article will be limited to a discussion of these two types.

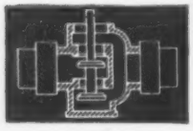
All condition controllers must have a controlled mechanism which regulates the controlling means. Generally, this controlled mechanism takes the form of a throttling valve actuated by a



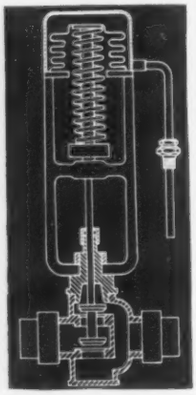
DIRECT-ACTING DIAPHRAGM MOTOR VALVE



THREE-WAY CONTROL VALVE



REVERSE-ACTING DIAPHRAGM MOTOR VALVE



SELF-OPERATED REGULATOR

diaphragm, motor, or piston. This responsive mechanism, then, will be the first item to be defined.

The term **Diaphragm Motor Valve (DMV)** (or Control Valve) is used to designate a valve which is actuated by means of fluid pressure applied to a flexible diaphragm or bellows, the motion of which is opposed by a helical spring. The valve itself may be single or double seated, or of the butterfly type.

Uses: In the steam line to a dryer, dye vat, or size box.

The **Direct-Acting (DA) Diaphragm Motor Valve** closes against the action of the spring with an increase of pressure on the diaphragm. The spring opens the valve as the pressure to the diaphragm is released.

Uses: Wherever safety requires the valve to open wide in the event the diaphragm ruptures or pressure supply fails.

The **Reverse-Acting (RA) Diaphragm Motor Valve** opens against the action of the spring with an increase of pressure on the diaphragm. The spring closes the valve as the pressure to the diaphragm is released.

Uses: Wherever safety requires the valve to close tight in the event the diaphragm ruptures or the pressure supply fails.

The **Three-Way Control Valve** is provided with two inlets and one outlet.

Uses: To control the flows of both heating and cooling mediums; also serves as a chamber for mixing steam directly with water on hot-water heaters.

The **Three-Way Diversion Valve** may be identical in construction to the three-way control valve, but is used with a single inlet and a double outlet to divert the flow from one line to another. When pneumatically operated, the control of the valve may be snap-acting; i.e., the pressure supply to the diaphragm is applied or released instantly, so that one outlet will be wide open and the other entirely closed to prevent any throttling action.

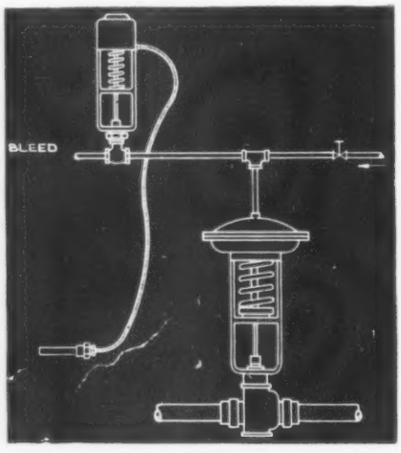
The term **Self-Operated Regulators** refers to the general class of regulators which are operated directly by changes in the controlled condition acting on the diaphragm or bellows of the control valve. Thus, a reverse-acting DMV, if equipped with the proper spring and diaphragm size, becomes a pressure-relief valve; likewise, a direct-acting DMV becomes a pressure-reducing valve.

Uses: Pressure-relief valve used for certain types of pressure tanks and for exhaust-process-steam systems. Pressure-reducing valve used for holding constant steam pressure on such applications as dryers, slashers, or dye kettles.

A self-operated temperature regulator is similar in construction, except that a metal bellows is used as part of the thermometer system. Changes in temperature at the bulb will change the vapor pressure of the filling liquid, thus increasing or decreasing the pressure on the bellows. The regulator may be direct-acting for heating service, or reverse-acting for cooling.

Uses for self-operated temperature regulator: Size heating, slasher cylinders, dye vats, and many other applications where the requirements are for a self-contained, sturdy, reliable regulator.

The term **Pilot-Operated Regulator** refers to a diaphragm-motor-valve unit where the fluid pressure to the diaphragm is controlled by an auxiliary pilot. The pilot may be a small single-seated reducing or relief valve (depending on the service) and may be mounted directly on the superstructure of the valve, or in the pressure fluid supply line.



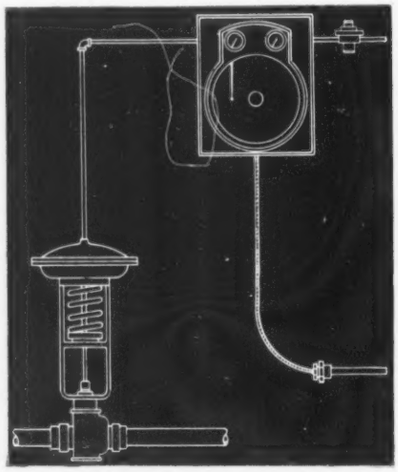
PILOT-OPERATED REGULATOR

Uses: For either reducing or back-pressure service; e.g., on high-pressure steam lines when the valve size is large or the pressure is high; can be used for valve sizes 16-in. and larger.

A small self-operated temperature regulator may be used as a pilot to control the fluid-actuating supply to a diaphragm motor valve, in which case the unit would be a pilot-operated temperature regulator.

Uses: On applications where compressed air is not available, but where the steam pressure is high and close regulation is required.

The term **Air-Operated Instrument Controller** applies to the control instrument only, and does not include the diaphragm motor valve. The motion of a primary element—such as a thermometer or pressure spring, a flow-meter differential float, a humidity-sensitive element, or a liquid-level float—is utilized to operate a sensitive but powerful pneumatic relay, which in turn controls the air pressure to the diaphragm



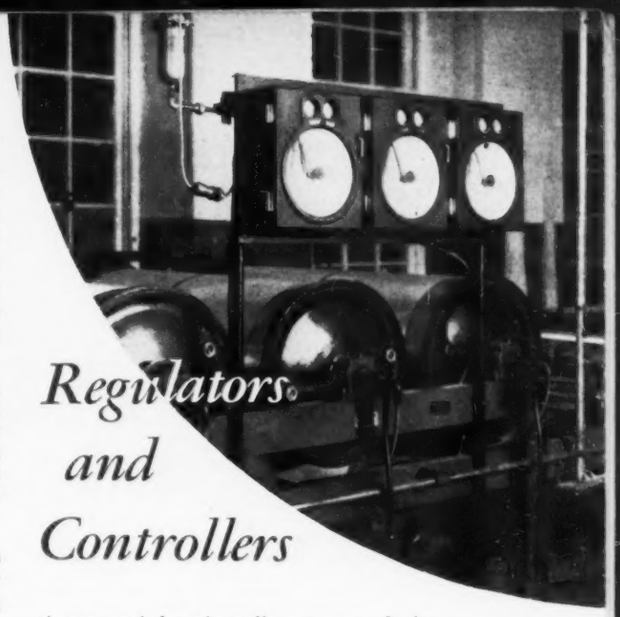
AIR-OPERATED INSTRUMENT CONTROLLER

motor valve. The design is such that the power necessary to operate the relay is reduced to a minimum, and the accuracy of the primary indicating or recording instrument is not impaired or reduced. This is the standard air-operated controller.

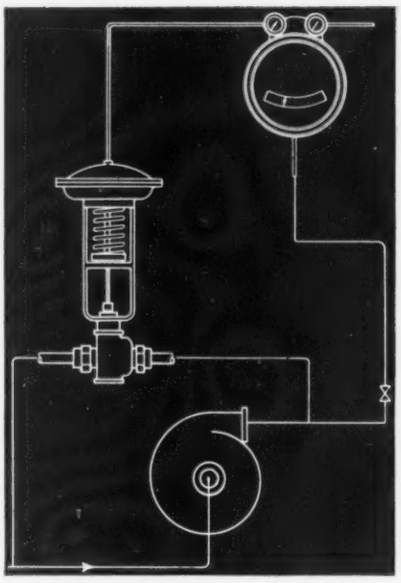
Uses: In almost every phase of the textile industry for controlling wet- and dry-bulb temperatures, relative humidity, temperature in size cooking and heating, temperatures in warp sizer cylinders, constant flow of steam, constant boiler pressure, constant dryer temperatures, constant dye-beck temperatures, etc.

The following list shows some of the more common forms in which the air-operated controller is supplied:

In the **Recorder-Controller**, the control unit is combined with a recording mechanism to serve as both a condition recorder and controller. The ma-



Regulators and Controllers



OFF-AND-ON CONTROL

jority of condition controllers are of the recording type.

Uses: Wherever a permanent record of conditions is wanted.

In the **Indicating Controller** some means of indicating the controlled condition is provided. The means may be a pointer operated directly by the primary power unit of the controller or it may be a separate dial thermometer or pressure gage.

Uses: Where the operator needs an accurate and correct indication of the controlled condition, but does not need a record.

The **Non-Indicating Controller** is an instrument type of controller, but without the recording or indicating feature.

Uses: Where no indication or record is required, or on equipment which already is equipped with separate condition indicators or recorders.

The **Direct-Set Controller** is an instrument provided with a calibrated set pointer which permits the control point to be predetermined. Almost all recorder-controllers are direct-set; this feature may or may not be supplied with non-indicating controllers.

The foregoing classifications are general, and no attempt will be made to describe or name the many variations of the above-mentioned types of regulators and controllers. The balance of these notes will cover some of the definitions, terms, and characteristics of air-operated instrument controllers.

In **Off-and-On Control** (Open-and-Shut Control) the action is similar to that obtained with an electric thermostat operating a solenoid valve. A slight deviation from the control point will cause the diaphragm motor valve either to open or to close. The control valve will not take an intermediate or floating position. A special adaptation may be designed to function as a safety valve; the control valve is placed on a pressure system, and the control is set to open the valve wide at a predetermined pressure. The valve will remain open until the pressure drops a definite amount, at which time it will close tight. This action is exactly equivalent to "blow-down" in a safety valve.

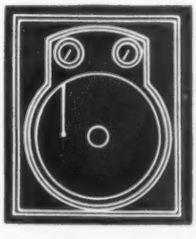
Uses: Because of the objectionable surge which it sets up in the controlled process, it is seldom used; occasionally, it is applied to small gas-fired boilers in which the heat load is steady, and the heating and cooling response is rapid and uniform.

The term **Throttling Control** implies that there must be a definite change or deviation in the controlled condition in order to cause the diaphragm motor valve to open or close completely, and that the pressure to the diaphragm of the motor valve (and hence the valve travel) will be proportional to the amount the controlled condition changes. In this definition, and wherever the proportionality of valve travel is referred to, it is understood that the valve capacity must be great enough to handle the maximum load without being wide open. Throttling control may be considered as analogous to the loading of a helical compression spring. The deflection of the spring under load represents the valve travel, and the load which causes the deflection represents the deviation in the controlled condition which causes the valve to travel.

Uses: Most condition controllers are of the throttling type.

Throttling Range specifically defines Throttling Control. It is the amount that the controlled condition must deviate or change in order to cause full travel of the control valve.

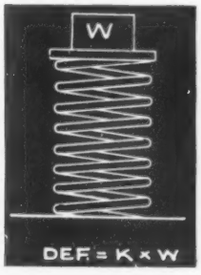
Control Band is another term sometimes used for throttling range. It implies the total deviation on either side of the set control point that the pointer must move in order to cause full travel of the control valve.



RECORDER CONTROLLER

INDICATING CONTROLLER

DIRECT-SET CONTROLLER



THROTTLING CONTROL

Drift is a special limitation of throttling range. It is the amount that the controlled condition must deviate in order to cause a travel of the control valve just sufficient to take care of actual load changes. For example, a temperature controller might require a change of 5° to cause full valve travel; the throttling range, then, would be 5°. But, with the same controller, a 2° change in temperature might cause sufficient valve travel to take care of the maximum load variation; then the drift would be 2°. Drift is an inherent and undesirable characteristic of throttling control; the wider the throttling range, the greater will be the drift for a given load change.

Throttling Range Adjustment. All commercial condition controllers provide for some adjustment of the throttling range. Throttling Range is defined in terms of percentage of the controller range. Thus, if the range of a temperature controller were 200°, and the temperature had to change 20° to open the diaphragm motor valve wide, the throttling range would be 10%. Usually the throttling range adjustment is classified as either standard or wide. Standard throttling ranges will vary with different manufacturers from as low as 1 to 10% to as high as 75% or higher. Too wide a throttling range defeats the function of an automatic controller, and the drift will be so great as to require manual re-setting of the control point for every load change.

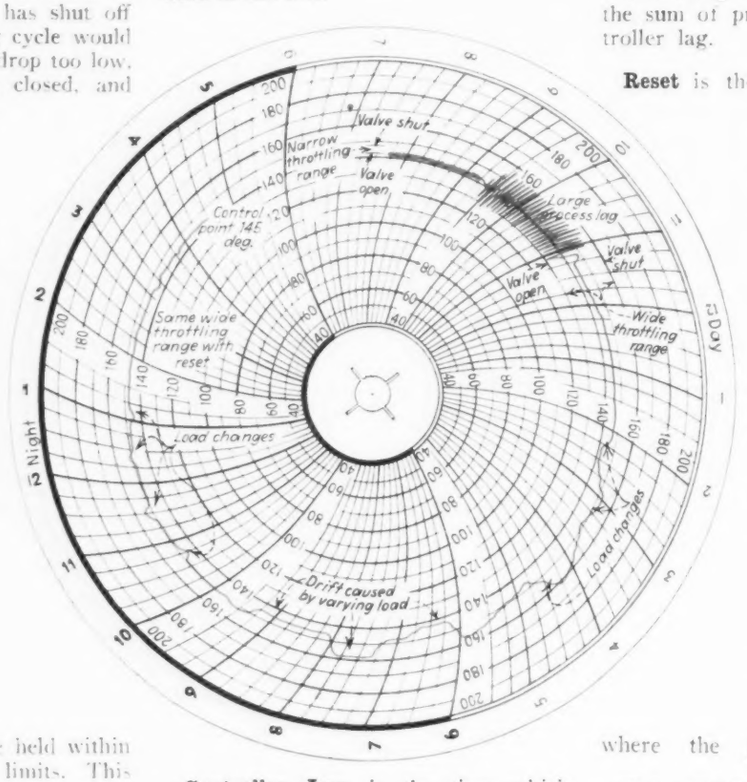
Process Lag is what makes a wide throttling range necessary. It is the time which elapses between a corrective action of the controlled mechanism (DMV), and the result of that corrective action on the primary sensitive or measuring element of the condition controller. For example, assume that as a result of a sudden load change, a temperature controller with its bulb in

a heated liquid has called for more steam by causing the DMV to suddenly open an additional amount. The response of the DMV may be quite rapid, but it may take an appreciable length of time for the increased flow of steam to heat the liquid surrounding the bulb enough so that the temperature controller will start closing the valve. But in the meantime, the valve has stayed open so long, that too much heat has been supplied to the liquid and the temperature will continue to rise, even after the valve has shut off tight. A complete hunting cycle would be for the temperature to drop too low, due to the valve having closed, and then to over-shoot again when the valve opened wide.

Hunting, **Surging**, and **Cycling** all mean the same thing; namely, the over-control which results when the throttling range is not wide enough for the process lag. Hunting is caused by process lag and narrow throttling range. Drift is caused by load changes and wide throttling range. The tendency to hunt can be decreased by widening the throttling range; the tendency to drift can be decreased by narrowing the throttling range. The most satisfactory throttling control will be when both hunting and drift are held within reasonable or permissible limits. This implies the correct throttling range for a specific controlled condition. But, it should be clearly realized that correcting for drift may increase hunting, and *vice versa*.

No two processes will have the same process or time lag, and this is why it is so important that the condition controller be equipped with means for varying the throttling range. This adjustment permits the operator to synchronize the throttling range with the process lag.

Impulse Lag may be defined as the time which elapses between a sudden impulse or change in a controlled system and the full effect of that change on the primary responsive element of the condition controlled. Thus, with a temperature controller, there will be a time interval between a sudden change in the temperature of the medium surrounding the bulb and the full response of the recording or controlling unit to this change. This time interval is known as "Thermometer Lag," and will depend on the nature of the fluid surrounding the bulb, on the material and construction of the bulb, on the inherent heat capacity of the thermometric fluid, on the length of capillary tubing, and on the volume increase of the bourdon spring. The magnitude of the time lag will depend on the rate of temperature change, as well as on the magnitude of the change. The impulse lag of a pressure controller will be much less than with a temperature controller, and the magnitude of the lag will depend in part on the length of the pressure connecting line and the fluid in the line.



Controller Lag is the time which elapses between a definite movement of the primary responsive element and the full effect of this movement on the control valve. Controller lag is the functional lag of the controlling mechanism itself, and is independent of process lag and impulse lag. As an illustration of controller lag consider a condition controller which has been maintaining a pressure of 5 lb. on the diaphragm of the control valve. A sudden and large change in load calls for an increase of air pressure to 15 lb. The initial volume of the air system is determined by the volume of the diaphragm chamber and the air line to the diaphragm motor valve. To increase the pressure from 5 to 15 lb. will require that a definite volume of air flow to the diaphragm of the control valve. In addition, the diaphragm travel will increase the volume in the diaphragm chamber to require an additional flow of air; for high-lift valves with large diaphragms, this increase in volume is large. All of the air flow must be supplied by the air relay of the condition controller. Unless the air relay has sufficient capacity, the controller lag may be quite large.

Total Lag in a controlled system is the sum of process, impulse, and controller lag.

Reset is the ability of a condition controller automatically to compensate for drift by gradually returning to the set control point after a load change has occurred. Use of a reset controller is indicated for services or applications where the load changes are large and the process lag is great. If a load change is sudden, the controlled condition will deviate from the control point (drift), but will come back to the control point at a rate dependent upon the total deviation, and on the time lag of the reset device. This time lag must be greater than the process lag. The Reset will be of little value where the load is fluctuating rapidly or where the process lag is small.

Valve Positioner is a mechanism for attaching to the diaphragm motor valve, and is jointly actuated by the condition controller and the travel of the valve. Its function is to set up and maintain an exact proportionality between the air pressure to the diaphragm and the travel of the valve. It compensates for friction, off-balance pressure on the valve plug, hysteresis of the diaphragm and spring, and the changes in effective area as the diaphragm travels. The valve positioner makes easier the work of the condition controller on those services or applications where an extreme nicety of control is required.

Sensitivity is the most misused term in the nomenclature of instruments and controllers. It apparently means whatever the user wishes it to mean, from throttling range, drift, and plain friction, to process lag or impulse lag. Any formal definition of this term will be omitted from this article; but it is suggested that its meaning be restricted to indicate lack of friction, and lightness and ease of movement of parts, in contra-distinction to inertia, sluggishness, or hysteresis.

ADVERTISING PAGES REMOVED

The Overseer's Corner

Publicity for Pay Envelopes?

"JUST the other day I was in a mill where all the wages earned by the individual operatives during the previous week are posted on the bulletin board," Pete remarked to Bill as they started home from work. "I have been thinking it over and there are a lot of good features in such a plan."

"Nonsense!" Bill snorted. "You known darn well that no one likes to have his or her income plastered up in some place where everyone can see it. Don't you think that people have a right to have some things kept private?"

"There you go, shouting again," Pete laughed in return. "If you would only stop to think, you would know that wages aren't such a secret after all. Piece rates and hourly rates are mostly known quantities in a given mill, and any worker can pretty well figure out what another is getting."

"Then why this bulletin-board stuff?" returned Bill.

"It's just like marks in school," Pete explained. "If you look at a list and see that you are earning less than anyone else in the same line of work, you don't like it very well and think to yourself that you had better snap into it a little bit so that folks won't think that you are a poor worker. On the other hand, if you find yourself standing high on the list, you want to keep up there. Further, such publicity of weekly pay envelopes shows that the mill isn't ashamed of its wage rates."

"But how would you like to have *your* salary posted?" was Bill's parting shot as he turned off at his street.

• Do YOU think that the wages of individuals should be posted in the department?

"Yes Men" Secondhands

Editor, Overseers' Corner:

A man who always agrees with his superior is not working in the interest of himself, his overseer, or the firm. The overseer cannot be correct in everything he does and says as no man is perfect. I suggest that the secondhand let his voice be heard if he thinks that the overseer is about to make an error. He should use judgment in doing so, however, and should approach the matter in such a manner that the overseer will see that his secondhand is working for the overseer's interest and not trying to argue just to hear himself talk. Do not try to make the overseer think that you have out-witted him, but make him feel that you are part of his daily plans.

One of the quickest ways to lose the overseer's respect is to have the secondhand say "It's not my fault" and sympathize with the workers when he has been sent around to tell them something that does not appeal to them. Practically every mill has one or more stool pigeons who take great pleasure in reporting to the overseer whatever they see or hear and in return are granted small favors. Naturally when the overseer hears the way his secondhand performs his duty he loses his respect for the man. Can we blame him?

D. E. F.

Cleanliness

Editor, Overseers' Corner:

I have always been a disciple of the old adage that "Cleanliness is next to godliness," not only with regard to personal habits, but with respect to material surroundings as well. After reading the article "Is Cleanliness Worth the Cost?" in the Overseer's Corner, I believe that I am more firmly convinced than before. I cannot help but think that a clean place in which to work is an incentive to do better, first-class work.

To my mind, it does not seem credible to expect people to go home and beautify their homes and yards after they have worked at least eight hours in an unclean or messy plant. It seems more likely that their homes would tend to stay in the same condition as their place of work, since that is where the majority of workers get their leadership from overseer and superintendent. For my part, I will take a little less pay and a clean place in which to work anytime.

W. D.

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Being Human

Editor, Overseers' Corner:

The phrase "Remember we're all human" is one that I think should be kept in mind from mill superintendent down the line to section hand. It was told to me by the superintendent of a large mill a number of years ago when I was put in charge of my first spinning section.

"Remember we're all human," he told me. "Each night when the bell rings and you go home to your family, remember that your workers do a similar thing. Treat them all as you expect to

CONTRIBUTIONS ***to "The Overseers' Corner" are paid for without regard to length. We will use letters discussing the narrative on this page or any other pertinent matter whether of mechanical, managerial or just plain human interest. Those who contribute kinks or practical helps will be paid additional for an appropriate sketch to illustrate their device. It is not necessary to submit finished drawings. If these pages interest you—contribute something to them to interest others. Address Editor, Overseers' Corner, Textile World, 330 West 42d St., New York, N. Y.***

be treated by me. A pat on the back when deserved is just as necessary as the correction of a human error and helps to make a worker think that he or she is a part of the organization."

I have found that advice to be one of my greatest assets.

M. H. B.

Recognizing Ability

Editor, Overseers' Corner.

I have been contending for years that there is not a close enough contact between the superintendent and the workers. Often valuable men are overlooked because the super is not acquainted with their qualifications. A great many overseers seem to fear the man who shows ability and, instead of bringing him to the notice of the super, they are liable to speak slightingly of him.

In my opinion, there are few things in an industrial plant which cause more trouble than refusing to acknowledge ability and making the proper promotions when due.

K. M. S.

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Overseers' Practical Helps

Weaving Weak Woolen Yarns

The weaving overseer on woolens may be confronted at various times with the task of weaving a tender lot of worp yarn. To put such a lot on the loom without taking steps to insure nearly normal weaving discourages both the overseer and the weaver. I have found the following plan very successful in handling weak yarns:

Examine—or have the secondhand examine and report on—every new warp that goes in the loom. Also, have all dresser tenders on the lookout for weak yarns. When a poor yarn is discovered, bring on another lot, taking every precaution to insure a strong yarn. Very often it is not necessary to make another lot as the weak yarns can be used in combination with another shade. Make out a drawing-in draft especially for these warps with the draw so that all ends of the weak yarn will be on the first harnesses and on separate harnesses from the strong yarns. For example: An end-and-end pattern drawn in one, two, three, four would be changed to one, three, two, four, starting with an end of the tender yarn. It is then necessary to change the pattern-chain draft to match the draw.

When the warp is put in the loom, the stirrups operating the two front harnesses, which carry the weak yarn, should be lowered on the harness jacks so that they will not raise or lower these harnesses as much as the harnesses with the strong yarn. When this is done, most of the weight of the warp pull will be on the strong yarn, with little strain on the weak ends. By following this method, I have seen the weaving of some warps improved 50%.

WILLIAM FOX.

Winding Webbing

Here is the way one narrow-fabric firm winds up its woven webbing into rolls while the loom is running:

The sand-roll is grooved on one side, and so are the wooden rollers that are on the shaft below the loom, as shown in the accompanying illustration. An elastic cord is used for a belt, so that a good tension is always maintained.

VICTOR C. BORIS.

Spindle for Paper Cops

The regular spindle used with the late-type shuttle is shown in Fig. 1. In the past, when we used paper cops with such shuttles, we either used a cold chisel to put burrs on the spindle or else spread it with a leather wedge, otherwise the cop would slide off. However, we found that by using an old-type spindle, as shown in Fig. 2, it would not be necessary to mar the regular spindle. Note that this spindle is turned upside down, instead of being used in the regular position.

Old-type spindles with the spirals cut as shown are a holdover from the days of paper cops and are quite common around the mills.

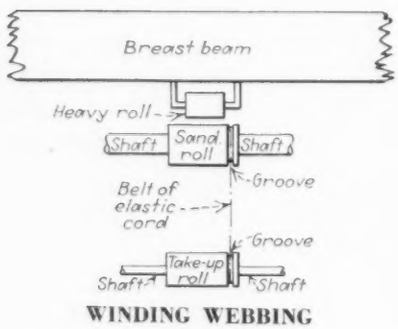
C. H. CALLAHAN.

Shaded Serges

A mill making fine serges had trouble from a certain proportion of each set of twelve pieces coming out shaded in the piece. Side to center was perfect, but usually three pieces out of the twelve had one or two places of from 5 to 7 yds. quite a few shades darker than the balance of the piece. This had been going on for years, and the trouble had never been eliminated, although quite a few finishers had worked in that mill during the time.

A change was made in finishers, and this serious condition was brought to the notice of the new man. After straightening out some of the other troubles, he took time to investigate the shaded-in-the-piece situation and found it in the dryer. He reported his find; and the agent and assistant superintendent being skeptical, he declared he could make as many shaded places in any piece as they would like to have and asked them to go to the dryer with him. The dryer attendant was told to stop the machine and tie a piece of tape to the selvage where the piece was entering the dryer, start up the dryer, run 7 yd., stop again, tie another tape in, stop for as long as it would take to change rolls, and run another 7 yd. This was repeated four times in that particular piece, the finisher declaring that each length between the tapes would be a few shades darker than the balance of the piece. When the goods were examined at the perch, the four places were found to be decidedly darker as predicted. Then the agent asked for the theory and the possible remedy; both of which were given.

The mill had two dryers, with an open space of about 4 ft. between the sides, but each dryer was boxed in all around as close to the frame of the machine as it was possible to get it. For production purposes, an extra coil of piping had been placed in every layer of the dryer (so that double the amount of piping was being used than was really necessary) to assure plenty of heat at all times. When a thermometer was



WINDING WEBBING

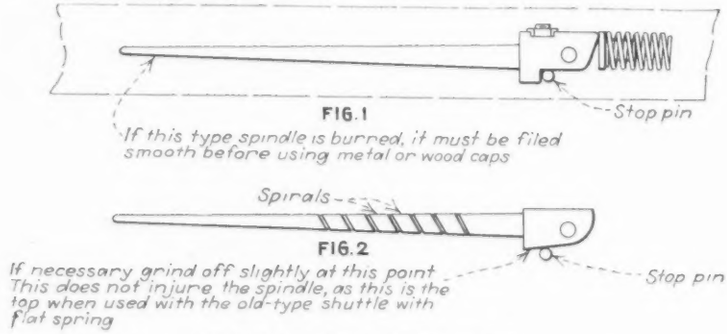

Stop pin
If this type spindle is burred, it must be filed smooth before using metal or wood caps
Spirals
Stop pin
If necessary grind off slightly at this point. This does not injure the spindle, as this is the top when used with the old-type shuttle with flat spring

FIG. 1

FIG. 2

SPINDLE FOR PAPER CAPS

placed inside and taken out again in 5 min., it registered 260° F.

All of the serges were rolled after extracting, on wooden rolls, four pieces on a roll. When the operator stopped the dryer to take off the empty roll and sew on the new one, time enough elapsed to do the shading which always took place on the top layer. If the dryer had been run continuously without stopping on any of the twelve pieces, nothing would have happened; but with the cold goods saturated with water entering a temperature of 260° and being stopped, the water in the goods soon reached the boiling point, and the dye not being completely exhausted, the dyeing continued; hence the darker shade.

Without further ado, one of the steam coils was shut off completely, the side doors were opened just a little to permit new air to enter, the coil that was left in use had the valve chocked down about half way, and a fan was soon installed by experienced fan engineers, where it would be most effective. After these changes were made, the mill had no more trouble from shaded pieces due to drying.

DAVID WELSH.

The Overseer's Corner

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Rayon on Cotton Looms

Numerous precautions necessary in converting automatics to the weaving of synthetic yarns

By J. S. Stevens

RECENT business improvement, coupled with the ever-growing popularity of rayon, has led many manufacturers to adapt old cotton looms to the weaving of rayon fabrics; and it is intended in this and a subsequent article to outline the necessary precautions, the defects which may arise, and the possible remedies for such defects. Shuttle-changing looms will be considered primarily, although it must not be forgotten that recent refinements in bobbin-changing looms, plus the first-pick-tension shuttles, are rendering the latter far better suited than formerly to rayon weaving.

Owing to the delicate nature of rayon, as compared with cotton, many precautions have to be taken to insure the least possible strain being placed on the warp. Adequate protection of the filling as the shuttle enters and leaves the boxes is necessary in order that the filament will not be damaged.

To protect both the warp yarn and the shuttle in its flight, the race plate is covered with smooth-surfaced felt of a hard-wearing nature. If the existing race plate is made of steel, this should be replaced by one made of wood, reduced in thickness to permit a perfect line-up with the shuttle-box plates when felt and race plate are in position. On narrow looms the felt may be of the same width as the race plate. However, on wide looms of 56 in. or more it is sometimes advantageous to have the felt the width of the shuttle only and to taper off the remaining part of the race plate. This facilitates open-shed clearance of the race plate.

Large Sand Roll Needed

Owing to the smoothness of the woven rayon fabric, it is advantageous to employ a sand roll of the largest circumference possible. As the perforated tin must be removed and the sand roll re-faced with either emery or rubber according to the texture of the woven fabric, the additional circumference will materially assist in preventing slippage, particularly at the selvages. The press roll should be made of solid steel about 2 in. in diameter and covered with soft felt of no less than ¼ in. in thickness.

To avoid uneven weaving, the loom should be thoroughly overhauled. If the vibration of the loom is not controlled as much as possible, the filling picks may become unevenly spaced. Nuts which have become loose should be tightened. The writer has found by experience that particular attention should be paid to the security of the breast beam, upright gear stands, breast-beam board, arches, and front and back cross pieces in the loom frame, the stability of which can properly be determined only by placing the wrench on each nut.

The take-up gears should be taken apart and examined for absolute freedom of movement in each individual gear. In the case of ratchet and pinion gears, it is only by careful examination of the pins that their security can be determined. Badly worn studs or bushings should be renewed. The gears should not be meshed too deeply on reassembling, so that the same freedom of movement is maintained in full combination with the sand roll as in the individual gear.

It is a profitable investment to replace such parts of the loom as are badly worn, and particular attention is directed to the rocker shaft and pitman arms. Apart from mechanical stoppages which may result from a badly worn rocker shaft, or undue play in the pitman arms, these are contributory causes to uneven weaving. At this stage of overhauling the loom in general, it is a good policy to check up on the efficiency of the protection rod.

How Many Drop-Wire Banks?

The required number of banks to be used in the warp stop motion can be determined only by the number of ends in the warp. The principal object is to avoid overcrowding the drop wires so as to prevent their freedom of movement. For example, with a reed space of 56 in. a two-bank stop motion is suitable up to 4,000 ends. Above 4,000 and up to 7,500 ends, it should be four-bank. With all warps containing more than 7,500 ends, a six-bank stop motion should be used. The stop-motion frame or separator bars should be so placed that any undue strain on the warp ends in the process of weaving is avoided.

The usual method of obtaining a better cover on cotton cloth by raising the whip roll and the breast beam must on no account be attempted in the weaving of rayon. Rayon differs from cotton in that it is a continuous filament, and the filaments of the yarn must not be disturbed during the weaving process. This is best accomplished by having the warp line at the same height as the level line from whip roll to breast beam. The correct elevation of the drop wires is easily ascertained at this point by threading a drop wire with a piece of cord and suspending the cord along the warp line.

Although the sizing of rayon warps is of great assistance to the weaving process, the filaments do not adhere together as do the fibers of a cotton yarn. The fibrous nature which enables this in cotton is absent in rayon, so that there is a far greater tendency for ends to "roll" together. It is recommended, therefore, that when weaving warps of more than 4,000 ends, no matter what width of beam is used, the beam be elevated by means of adjustable stands so that the ends leave the warp on the same level as the whip roll. By this method there is no pressure brought to bear on

***GATHERINGS** — Officers, overseers, and section hands of Hampton Spinning Mills, Clover, S. C., held their annual banquet on Jan. 16. . . . The Loomfixers' Club of Burlington Mills, Inc., Plant No. 1, Gibsonville, N. C., enjoyed a chicken supper and round-table discussion on Jan. 2. Thirty-five members and five guests were present.*

the yarn between the drop wires and the beam, and the danger of warp streaks caused by ends which are rolled together being held taut over the whip roll is eliminated. This position of the beam is also of great advantage to the weaver in repairing warp breaks behind the drop wires.

In taking precautions to avoid warp streaks, the groove in the lay where the reed rests should be carefully examined. The slight, yet constant, movement of an insecure reed will cause the face of the groove to become serrated. The reed may be in perfect condition; but, on the beat-up of the filling, the notches in the groove displace the dents in the reed, and warp streaks result.

Lining the Shuttle

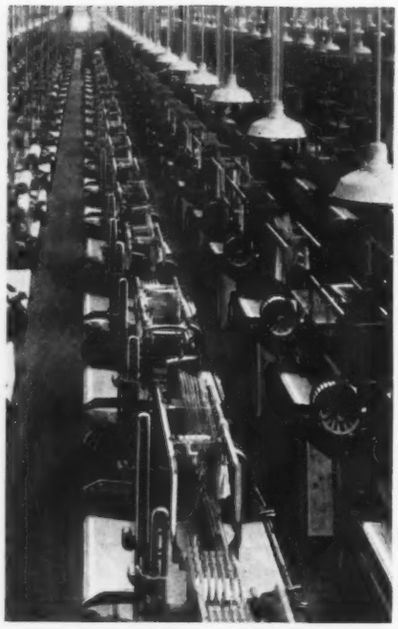
Unless correct tension is afforded to the filling as it leaves the eye of the shuttle, shiners in the cloth will result as the filling is being interlaced. Adequate tension is best afforded by lining the inside of the shuttle with suitable animal fur. While many and various kinds of fur can be used, a full-bodied fur, such as the ring-tailed opossum, gives the best results. The fur should cover the full inside depth of the shuttle and extend the full length of the quill, except for the feeler slot. Isolated long tips in the fur should be cut away, as there is a possibility that the filling may partially entwine itself around one or more of these.

Sharp edges should be removed where the filling groove reaches the porcelain eye of the shuttle. As a precaution against shuttle marks, as long a shuttle as it is possible to run in the loom should be used. Shoulders should be tapered off and, after a perfectly smooth surface has been obtained, polished, first by rubbing with coconut oil and then with shellac, until dry.

It is advisable on shuttle-changing looms to pad the inside of the magazine uprights with strips of thin felt. This not only protects the shuttles from becoming roughened by continued insertion, but also prevents the filling, from the eye of the shuttle to the stub, being cut by the vibration of the loom.

The shuttle-box front binder on the plain side of the loom may be covered to the feeler slot with felt similar to that used on the race plate, but on the magazine side the front binder should be covered with good-quality cotton cloth of a smooth surface. This will afford adequate protection for the filling as the shuttle enters and leaves the boxes so that the filament will not be damaged.

Temples are necessary for the weaving of light-sley warps in order that good selvages may be woven. Rubber-covered temple rolls must of course be used to avoid marks. With warps of heavy construction, employing bright yarn, the problem of shuttle marks



caused by the erratic flight of the shuttle striking the yarn has to be considered. To assist in eliminating this defect, the selvages should be strengthened and no temples used for the purpose of holding out the cloth. It will be necessary to use only the thread-cutting section of the temple.

Beams, Harnesses, Drop Wires

Beams used for looms of a certain width should be uniform, and the arbors should be of a suitable diameter for the openings in the beam stands to permit a smooth rotation of the beam. If the warp let-off is of the friction type, the collars of the beam should be of a sufficient width so that, when the rope or chain is in position, the coils will be clear of the beam head and the shoulder of the collar. The difficulties of obtaining even weaving should not be increased by beams coming from the warping department with loose heads, arbors which are not true, or rough beam collars.

The type of harness manufactured specially for rayon weaving is recommended for use in all cases. The defect of single heddle bar harness, usually employed in cotton weaving, is that the heddles have a tendency to "fall" at an angle, thereby crowding the ends in the harness and causing warp streaks in the cloth. A freedom of movement is afforded the heddles in the new double heddle bar type of harness which greatly minimizes this defect. Too many ends, however, should not be drawn in one harness.

A straight draw is not good for plain weaving. In order to obtain the best cover possible, the ends should be drawn in the harnesses 1, 3, 2, 4. If six harnesses are used, they would be drawn in 1, 3, 5, 2, 4, 6.

Drop wires which have become rusted or bent should not be used. Rust will cause surface roughness, and chafing of the yarn will result, especially if the round edge of the eye is not perfectly smooth. A bent drop wire is ineffective, as it will not fall the required distance should the end break.

No matter what precautions are made, certain rayon yarns will knit together to some extent, either immediately in front of or behind the drop wires. For the purpose of obviating this as much as possible, the following example is given: If a two-bank drop-wire frame is used and the ends are drawn in the harnesses 1, 3, 2, 4, the ends should be drawn in the drop wires 1 and 3 on the first bank and 2 and 4 on the next bank. Warps wired in this manner also help to cover a reedy appearance in the cloth.

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Personal News

John M. Hood has been appointed assistant superintendent of Farr Alpaca Company, Holyoke, Mass. Mr. Hood has a background of eighteen years of experience. He has worked at Lorraine Mfg. Co. and Pacific Mills.

C. C. Roberts has been made superintendent of the upper plant of Pelzer (S.C.) Mfg. Co. He was formerly overseer of carding at this mill, and has held similar positions at Watts Mills, Laurens, S. C., and Brookside Mills, Knoxville, Tenn.

M. M. Taylor has become superintendent of the lower plant of Pelzer (S.C.) Mfg. Co. He was formerly overseer of weaving at the upper plant.

Cyril Byron has left Wood Worsted Mill of American Woolen Co., Lawrence, Mass., to become superintendent of dyeing at Barre Wool Combing Co., South Barre, Mass.

James B. Neel has resignd as overseer of dyeing at Cleveland Worsted Mills, Ravina, O.

A. J. Kane, formerly overseer of finishing at Renfrew (Ont.) Woolen Mills, has taken a similar position with L. W. Packard Co., Ashland, N. H.

Bart Turner is supervising the wet finishing for Talcott Brothers Mill, Talcottville, Conn.

Elliot Dougan has assumed charge of

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the dyeing department for Nye & Waite Kilmarnock Corp., Auburn, N. Y.

Arthur Worth has returned as overseer of carding and spinning at Baltic Mills of American Woolen Co., Enfield, N. H.

J. M. Simpson has assumed his new duties as overseer of weaving at the Orangeburg, S. C., plant of Santee Mills.

R. W. Sanborn, formerly in charge of weaving at Amoskeag Mfg. Co., Manchester, N. H. is now with Joseph Bancroft & Sons, Reading, Pa.

E. S. Sherman is now overseer of finishing for Wallace Woolen Mills, Detroit, Mich.

W. E. Baker, formerly overseer of weaving and the cloth room at Woodside Mills, Fountain Inn, S. C., is now general overseer of weaving at both plants of the company at Fountain Inn and Simpsonville, S. C.

R. L. Pope is now second hand in spinning, spooling, winding and warping at Pomona Mfg. Co., Greensboro, N. C.

J. E. Wyatt has accepted a position in charge of the finishing department at Aspinook Co., Jewett City, Conn.

J. R. Jinks, who has been overseer of spinning at the Georgia-Kincaid Mills, No. 3, Griffin, Ga., is now overseer of carding also.

W. H. King is the new overseer of weaving at the Pittsfield (N. H.) Mills.

George Dyson, formerly second hand at No. 1 Mill, Jefferson (Ga.) Mills, has been made overseer of the cloth room at Mill No. 2, Crawford, Ga.

E. C. Simmons, formerly overseer of the carding department of the No. 5 mill of Georgia-Kincaid Mills, Griffin, Ga., now holds a similar position with the Aldora Mills, Barnesville, Ga. **J. F. Andrews**, formerly overseer of carding at No. 3 mill has succeeded Mr. Simmons at No. 5.

W. L. Graydon has been promoted from second hand to overseer of carding at the upper mill of Pelzer (S.C.) Mfg. Co.

C. E. Goney is now overseer of weaving at Jefferson Mills, Crawford, Ga.

J. A. Baugh, 3rd, is now overseer of carding and spinning at Santee Mills, Bamberg, S. C.

C. R. Lewis has become master mechanic and engineer at Mexia (Tex.) Textile Mills, following resignation of his position at Texas Textile Mills, Waco, Tex. He succeeds **R. L. Stegall.**

E. V. Wilson, formerly assistant to the superintendent of Pelzer (S.C.) Mfg. Co., is now with Greensboro Loom Reed Co., Greensboro, N. C., in charge of the office.

Henry P. Goodwin, who has been with Dunean Mills, Greenville, S. C., since graduating from Clemson Textile School in 1932, has been added to the sales force of SKF Industries, Inc., with headquarters at Atlanta, Ga.

James Doran has become finisher at Cocheco Woolen Co., East Rochester, N. H. He formerly held a similar position at Wilton (Me.) Woolen Co.

J. O. Wood, for the last nine years overseer in the rayon department of Slater (S. C.) Mfg. Co., has resigned to become affiliated with Spencer Corp., Spindale, N. C.

S. Francis Duffy, who was for seven years overseer of finishing for the Renfrew Woolen Mills, Renfrew, Ont., Canada, now holds a similar position with L. W. Packard Co., woolen manufacturers, Ashland, N. H.

Edgar Lane has been promoted from second hand to overseer of weaving at Enterprise Mfg. Co., Augusta, Ga.

Stanley Pratt, formerly of Ashland, N. H., is now overseer of finishing at the Robinson Mfg. Co., Oxford, Me.

T. T. Pitts, formerly second hand in weaving at Griffin (Ga.) Mills, has been promoted to overseer of weaving.

Walter Diamond has returned to Manchester, N. H., to become master mechanic at the branch of Pacific Mills there.

R. D. McDurmid, formerly of Thomaston, Ga., is now overseer of night carding at Atlantic Cotton Mills, Macon, Ga.

A. E. Hampshire, formerly with Bradford (R.I.) Dyeing association, is now connected with Lincoln Bleachery, Lonsdale, R. I.

David Hardman has been placed in charge of the dye house Manville Jenckes Co., recently started in the plant of its branch, Woonsocket (R. I.) Rayon Co.

W. C. Lane, formerly shift foreman at Osprey unit, Porterdale, Ga., of Bibb Mfg. Co., has been promoted to the position of overseer of carding at the same unit.

R. M. Ross, overseer of carding and spinning at Highland Cordage Co., Hickory, N. C., has resigned to become overseer of carding on the second shift at Chesnee (S. C.) Mills.

Gideon Perron, formerly of Pittsfield, N. H., is in charge of weaving for Lockwood Co., Waterville, Me.

P. S. Leach, formerly of the efficiency department of Porterdale, Ga., unit of Bibb Mfg. Co., has been promoted to shift foreman.

C. F. Weis is overseer of dyeing for R. Woolfenden & Sons, Attleboro, Mass.

W. T. Douglas, formerly of Amoskeag Mfg. Co., Manchester, N. H., is in charge of the slashing department at Pepperell Mfg. Co., Biddeford, Me.

Joseph Large is overseer of dyeing at Clear Spring Worsted Mills, Doylestown, Pa.

Ralph Quance has been named overseer of dyeing at Wyandotte Worsted Co., Waterville, Me. He was formerly with Washington Mill of American Woolen Co., Lawrence, Mass.

R. L. Hulsey, formerly with Ware Shoals (S. C.) Mfg. Co., is now overseer of carding at the Lumberton, N. C., plant of Mansfield Mills.

Francis H. Murphy, assistant superintendent, Belding Heminway Co., Putnam, Conn., and employed by the company 16 years, has become superintendent. Mr. Murphy is also serving his second term as mayor of the City of Putnam. He succeeds Orville T. Colby.

Clarence M. Mathieu, overseer of the shipping department, Willimantic (Conn.) Mills, American Thread Co., has been promoted to the office of assistant superintendent of finishing for the plant.

John McD. Moore, who was superintendent of the Laurens (S.C.) Cotton Mills for many years, has resigned.

Bob Powell, personnel manager at the Goodyear Mill at Atco, Ga., left Feb. 1 for Jackson, Mich., where he will head the employment office of the company's plant there. He has been succeeded at Atco by **Arthur Parker,** who has served as assistant personnel manager at the Atco plant since June, 1930.

P. F. Parkman is now overseer of weaving, Nos. 4 and 5, Springs Cotton Mills, Lancaster, S. C. He formerly held similar positions with the Gossett Mills, Anderson, S. C., and the Anderson (S. C.) Mills.

J. I. Reeves, after being associated with the Callaway Mills, La Grange, Ga., for 36 years, and at present holding the position of overseer of weaving at the Unity Cotton Mills plant at La Grange, has retired. He has been succeeded by **G. S. Waller.**

J. B. Walker, formerly of Aurora, Ill., is now overseer of the finishing division of the Hillside unit of the Callaway Mills, La Grange, Ga.

BEAVER BROOK OVERSEERS ELECT

AT A RECENT meeting of the Beaver Brook Overseers' Association of American Woolen Co., Collinsville, Mass., the following officers were elected: William H. Bromley, superintendent of yarn, president; Samuel A. Stubbs, overseer of dyeing, vice-president; Bernard V. O'Reilly, overseer of carding treasurer; Arthur P. Hennessy, production superintendent, secretary.

The Overseer's Corner

• • •

Questions & Answers

Fiber Resists Dye

Technical Editor:

Inclosed you will find five strands of 2/20 50% rayon and 50% ⅛ blood wool, 3 strands of cotton yarn, and 1 strand 2-ply (1 end 50% rayon and 50% ⅛ blood and 1 end of an unidentified fiber).

These were all taken from a piece of union dyed goods. We cannot understand why the one end did not take the dye. Can you tell me what this end is composed of? It may be a mixture of mohair and wool; but if so, we think it should dye. (8361)

While the fibers in question have shown a resistance to dyeing as great as would have been expected from an acetate fiber, the material is positively an animal fiber. It is not soluble in acetone, burns, and gives off the odor of animal fiber and, by itself, dyes quite easily with acid dyestuffs. Under the microscope it appears to be a relatively smooth fiber, free from any prominent surface scales, and without any dark central lumen. We are unable to state the origin of this fiber. Sometimes wool which has been pulled with lime and wool which has been carbonized by the aluminum chloride process shows a resistance to dyeing, especially when union dyes, which have not a very great affinity for animal fibers, are used. These goods would dye much better if the dyer would use a mixture of dyes, some of which dye cotton and rayon only, and wool dyes which dye neutral in the same bath.

Stains in Knitted Glove

Technical Editor:

We are inclosing a stained white knitted glove. We are having considerable trouble with a knitter customer on account of these stains, and should like to have your cooperation in determining what kind of a stain this is and what is causing it. (8398)

This is a lubricating-oil stain or a needle-oil stain and was caused by reason of the fact that the yarn came in contact with oil after the oil had been in a bearing or between two moving metallic surfaces. We are inclined to believe that the stains are being produced when a needle is changed or adjusted.

The stain can be removed by drycleaning the glove with gasoline, tylol, or other solvent to remove the oil, and then treating in a hot 10% hydrochloric acid solution at 160° F. for 35 to 40 min. This treatment is followed by sufficient rinsing to remove the acid. A small amount of ammonia in the final rinse will insure complete neutralization of the acid.

Organizations for 1½s and 3½s Cotton Yarn

Technical Editor:

Will you kindly advise what equipment is required to manufacture cotton yarn in 3½ count and 1½ count, similar to the inclosed sample. We are manufacturers of braided cordage and should like to buy raw cotton and spin our own yarn. At the present time, we are using about 1,000 lb. per day, but there is a possibility of increasing this business to about 5,000 lb. per day. (8407)

You do not state how much of the 1,000 lb. per day or the 5,000 lb. per day should be 1½s yarn and what part should be 3½s yarn. The adjoining list is based on 5,000 lb. per 10-hr. day of 3½s yarn; but if 1,000 lb. is desired, an approximate figure for the machines necessary can be obtained by using one-fifth the equipment specified. Where the number of machines or spindles is not divisible by 5, an additional machine or additional spindles should be employed.

The cotton appears to be 1 3/32 in. staple and strict low middling for both yarns.

Machine Set-Up and Organization for 5,000 lb. per 10 hr. of 3½s yarn.

Machines	*Total Hp.*	*Organization*	*Draft*
Opening Equipment:			
Bale Breaker	5		
Vertical opener	7½		
Conveyor	1		
Condenser	1½		
Distributor	2		
Picker Room:			
6 One-process pickers	75	13¾ oz. lap	
Card Room:			
42 Cards — 12-in. coiler	42	60 grain sliver	100
6 Six-delivery drawings	10	60 grain sliver	6
1 Four-delivery drawings	10	60 grain sliver	6
3 80-spindle slubbers	6	.50 hank roving	3.6
Spinning Room:			
10 216-spindle frames	180	3.5s yarn	7 draft 6½ t.p.i.
Waste Room:			
1 Two-beater waste machine	15		

Additional Supplies Needed:

1 Sewing machine	1,000 sliver cans	1,000 Slubber bobbins
2,500 Roving skewers	168 lap rods	18 to 22 Roving trucks
1,500 Spinning bobbins	12 lap trucks	3 Grain scales
6 Bobbin trucks	1 size board	1 Roving reel
20 yarn boxes or trucks	Humidifying equipment	1 Cotton scale
1 Yarn reel	Spindle tape	1 lap scale
1 Yarn breaking machine	Twist gears	Extra top rolls for spinning and slubber
2 Sets of roll gages	Draft gears	Tools (wrenches etc.)
1 Set card gages	Compressor	
2 Traverse grinders	Belting	
1 Bead roll grinder	Bands	
1 Stripping roll and truck	Travelers	
1 Fancy roll		
1 Card clothing machine		

Machine Set-Up and Organization for 5,000 lb. per 10 hr. of 1½s yarn.

Machines	*Total Hp.*	*Organization*	*Draft*
Opening Equipment: Same as for 3½s yarn			
Picker Room: Same as for 3½s yarn			
Card Room: Same as for 3½s yarn			
8 Six-delivery drawings	12	50-grain sliver	7.2
5 100-spindle slubbers Long-draft slubbers to be used	12.5	1½s yarn	8.9 draft 4 t.p.i.
Spinning Room: None needed for this set-up			

Additional supplies needed:

Same as for 3½s yarn, except that the following can be eliminated:

Sewing machine	Roving skewers
Bobbin trucks	Spinning bobbins
Yarn boxes or trucks	Spindle tape
Travelers	Extra top rolls for spinning frames

Welt Stripe Tight

Technical Editor:

A troublesome condition has developed in connection with one of our lines, a sample of which we are inclosing herewith. You will notice from this that the trouble appears to be caused by the blue stripe at the hem. While in the past we have had a little difficulty with stripes, we have not run into any serious trouble until recently.

The hem of the stocking that we are inclosing is made of 5-thread, 20 turns S, and the blue resist-dyed stripe is made of 6-thread, 6 turns S. Our mill foreman cannot understand what is causing the trouble. However, we feel that it is more or less mechanical, because we are using the same resist stripe silk that we have had during the last six months.

Upon close examination, it seems to us that the blue stripe is knit with a little more tension or tightness of the stitch. On the other hand, it would seem that there is more material on the outside of the hem than on the inside, because there seems to be extra material right under the blue stripe.

Will you kindly give us your opinion as to the cause of this trouble. (8397)

We suggest that you try two courses less in the outside half of the welt. That should improve conditions.

The blue stripe, being approximately 20% heavier than the other silk thread and doubtless loaded to some extent with the resist dye, knits much tighter than the 5-thread silk. Also, resist dyes usually give the silk a harsh feel, which causes a greater surface tension at the cones during knitting and tightens the stitch further.

Under the microscope, the stitches in the stripe incline in an opposite direction to those in the 5-thread. This difference is usual where opposite twists are used.

Since the picot top shows no tendency to turn to the inside of the welt, it appears as if the boarder is heavy handed and uses enough pressure to drag the outside of the welt sufficiently to cause the fold and fullness. You might find it simpler to solve the problem if you note whether this fullness exists before the stockings are boarded and where in the process of manufacture it begins to be noticeable.

Loom-Belt Slippage

Technical Editor:

We wish to submit to you a matter concerning which there seems to be considerable difference of opinion; namely, the advantage or disadvantage of eliminating slippage in loom belting on loose-and-tight pulley drives. We are in doubt about the application of a special belt dressing for this purpose. Your advice on this matter will be greatly appreciated. (8405)

The best belt drive for looms is one in which the slippage is reduced to a minimum. An excessive slippage in such a drive can cause the loom to bang off in starting if the lay is not pushed well back before the shipper handle is pulled. It will also cause loss of production and occasional bang-offs when the loom is running. Slippage of a loom belt cannot be controlled, and, therefore, a constant loom speed can-

not be maintained. If the speed of a loom varies, it will be almost impossible to adjust it so that it will run properly.

While a good belt dressing increases the efficiency of a belt, it has a tendency, when applied to a loom belt, to collect dirt and lint, which later are thrown off onto the filling and into the shuttle boxes, and from there dragged into the cloth. Some mills, using overhead belt drive on their looms, strictly forbid the use of dressing on the loom belts.

The most practical belt for looms is naturally one which is well-made and in which a good-quality leather is used. The belt should be placed with the grain, or smooth, side to the pulley and run with the inside points of the laps opposed to the direction of the pulley.

If the grain side of the belt is placed against the pulley, the strongest part of the leather, which is about one-third in from the flesh side, will be longer preserved. The grain side is also more likely to crack than the flesh side; and it should therefore be crimped, rather than stretched.

The reason for having the inside points of the laps running against the pulley—an arrangement which may not appear desirable at first thought—is that the outside points of the laps, which are under the greater tension anyway, are much more likely to be opened by the atmosphere and any objects struck, if they run against them, than the inside points are likely to be opened by being directed against the motion of the pulleys. On double belting, of course, both the inside and outside points of the laps run with the direction of the belt. The belt must be under proper tension and occasionally cleaned of collected dirt and lint.

Blanket Weaves

Technical Editor:

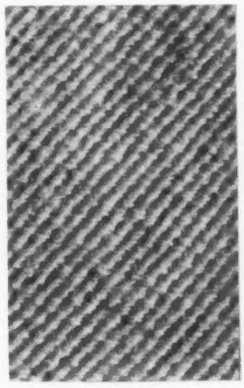
Our specifications call for a blanket to be double woven, size 66x84 in., weight 4 lb., 8 oz. when finished. Warp: 20/2, 2680/600 cotton; filling: 7¼-cut (2.18-type) wool. Warp and filling counts are to be 40.

Our trouble is that we get a skipped pick every sixth pick on top side. We have tried the inclosed set-up for the weave without success (Fig. 1). Can you suggest a weave that will overcome this trouble? Information would be appreciated on both plain and twill weaves, both sides of the cloth to be identical and both to be of a double weave. (8371)

Although the weave used is defective in construction (see Fig. 1) inasmuch as the filling stitching points are not properly covered or hidden, it would be folly to lay the blame for the skipping pick to this minor fault. Providing the chain is properly built, the only plausible reason that we can assign for the picking defect in question is purely a mechanical one, such as a skipping harness or defective risers in the chain, etc. It would, therefore, be advisable to check over the loom mechanism for one or other of these defects.

As already stated, the weave employed and indicated at Fig. 1 is defective in construction because, where the back filling stitches on the face side, the stitch is covered by face filling float on one side only; and, in like manner, when the face filling stitches to the back, similar conditions prevail.

Fig. 2 shows the correct weave construction for a twill formation on both back and face. If compared with Fig. 1, the difference in stitching will be evident. In Fig. 3 this same weave is constructed so that both face and back twills run in the right direction when turned over. It will be noted, however, that in this instance imperfect stitching occurs on the fifth, sixth, eleventh, and twelfth picks; but when the weave is used in the construction specified in your inquiry, no defect would show, and consequently it can safely be considered at least commercially practical.



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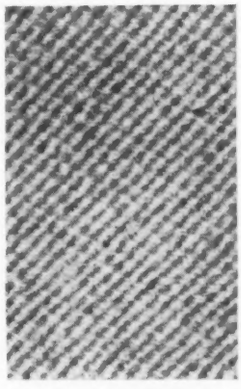

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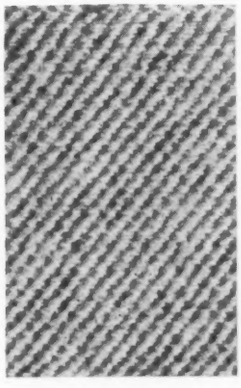

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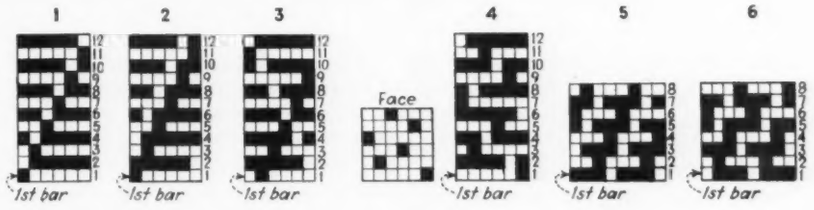


Finally the filling-backed sateen weave shown at Fig. 4 illustrates a perfect double sateen construction where both face and back will be identical in appearance. After finishing, any twill formation which may be apparent in the loom will disappear.

Once the basic principles of filling- and warp-backed weave construction are thoroughly understood, no difficulty should be experienced in combining fancy, twill, or plain weaves. For instance, Figs. 5 and 6 illustrate the ⅓ crow twill, filling flush in twill and broken orders respectively, both of which employ perfect stitching.

The woven patterns attached, and designated 1, 2, and 3, were woven with the weaves correspondingly marked. It will be observed that in 1 no skipping pick is discernible. Of course the cloth construction is all wool and of a much firmer make, but it must be borne in mind that construction will not hide or overcome weave defects.

For further information on this subject we refer you to the series of articles by R. A. C. Scott, now running in TEXTILE WORLD, where this branch of weave formation is fully dealt with.

Average Twist Multiplier

Technical Editor:

On page 99 of the December issue of TEXTILE WORLD haven't you made a mistake in the upper right-hand corner? You have put down that 34.42 over 53.16 equals 4.72. You evidently forgot to put in the square-root sign over the 53.16. The square root of 53.16 is 7.29. Dividing 34.42 by this figure will give you 4.72, which is the average twist multiplier. (8433)

You are correct, and we sincerely regret the typographical error. The calculation should read as follows:

$$\frac{34.42}{\sqrt{53.16}} = 4.72 \text{ average twist multipler}$$

Acetate Taffeta Wavy

Technical Editor:

We are writing for information in regard to wavy cloth, woven on C Model Draper looms. We are having lots of trouble with this, mostly on 150/40 yarn, taffeta weave, or 6-harness plain weave. The material is bought for first-class yarn, and 50% of our seconds are from waviness.

We cannot get this defect cleared up, although it seems that we have our take-up and let-off in perfect condition; in fact, that our whole loom is in perfect condition.

Have you any advice to offer on this condition? (8381)

Waviness is sometimes caused by excessive vibration in the weave room. To check on the possibility of vibration being the cause of your difficulty, we suggest that you adopt the following procedure: Stop all the looms. Then start up one of the looms and watch the cloth weaving. You should be able to tell at a glance whether the waviness has disappeared.

Unevenness in the setting of the twist

has been known to cause waviness, and we recommend that you test this factor in your filling.

Although you state that your looms are in perfect condition, we suggest, nevertheless, that you examine your reed springs or cradle springs. You may find that there is less tension in the springs on one side than on the other, a condition which would cause the reed to beat up the filling improperly. Also recheck your take-up motion, especially for loose keys at the sand roll. It would be advisable, in addition, to go over your let-off motion. Possibly you are not carrying enough tension on your warp. Again, your beams may not be rotating freely. Waviness can easily result from having the friction too tight.

Tight Ends in Rayon Warp

Technical Editor:

Will you kindly advise us as to what is responsible for the tight ends in the warp of the inclosed fabric. The yarn which we supplied for this fabric is a combination warp consisting of 75-denier, 50/55 turn, viscose-type rayon doubled 10 turns with a 75-denier, no-twist viscose. The filling is an ordinary crepe twist. The yarn has been tested and the twist found to be uniform.

You will note that some of the tight ends in the warp run the length of the piece, while others stop and start at intervals. After the goods are soaked in water, the tight ends largely disappear. The tight ends can barely be felt in a raw swatch, but are felt very easily in a finished swatch. The cloth had 76 picks off the loom, and we believe the fabric has been given about a 6% shrinkage.

We suspect that the construction of the fabric may not be properly balanced; in other words, that the filling is too heavy for the warp. Please let us have your opinion on this point. (8341)

We are positive that there is nothing wrong with the balance of the warp and filling. Some of the streaks are due to reed imperfections, as a powerful glass discloses that there are both reed streaks and tight-end streaks.

Some of the tight ends appear to have been caused at the warping frame, where a number of the cones or bobbins are not rotating freely. At times defects of this sort are caused by the warp ends sticking in the back part of the warp or adhering to the drop wires. They are also caused by the ends not running straight, as warp ends cannot be crossed over one another without a mark being produced in the fabric, although in the unfinished piece such marks cannot be seen.

It is possible, of course, that the ends were stretched in the winding or redrawing of the cones and bobbins, as these operations, when not conducted properly, are among the most flagrant causes of this type of defect, but it is difficult to establish this fact from only a finished sample of the fabric.

Rowiness in Knit Fleece

Technical Editor:

Under separate cover we are sending you a cut of a wool fleece which shows a bad rowy effect, apparently due to horizontal ridges and valleys. We originally thought that this is due to variation in yarn diameter or perhaps to uneven stitch on the knitting machine, but we are now satisfied that neither of these is the cause of the trouble. We shall appreciate if you will let us have your recommendations for overcoming this difficulty. (8401)

There is a variation in stitch length running anywhere from 58 to 65 stitches per foot of yarn. We suggest that the tension on the backing yarns be checked to see that it is uniform on all feeds. This may cause the unevenness, as an excessive strain or pull on the backing yarn will cause it to stretch out and appear tighter than yarn from the other feeds.

Finishing Woolen Blanket

Technical Editor:

Inclosed is a swatch of woolen blanket cloth. Kindly advise us whether this cloth was napped in finishing. If so, was it napped before or after fulling. The cloth seems similar to the O.D. Army blankets, except the color. (8389)

Without doubt, the sample submitted has been thoroughly napped. The usual procedure on this class of work is as follows: Full and scour to the necessary shrinkage; extract; nap, giving both sides an equal number of runs; dry; return to napper and give necessary number of runs to get the desired effect without tendering the fabric. On the last run on both sides take off all energy and work the counter-pile wire only.

On low-grade blankets it is often necessary to give the blankets a run or two on both sides previous to fulling. This will produce a well-covered bottom after fulling is completed. Another method is to full halfway, nap one or two runs, then complete the fulling and scouring, extract, dry, and finish napping. This last method will produce a soft, pliable woolen blanket.

Cut Filling in Labels

Technical Editor:

We inclose herewith some samples of labels showing spots. This seems to show up more on a dark yarn, but it is also evident on the yellow rayon-filled labels we include. We do not know what causes it to break inside the cross weave this way. We use a 140/2 white cotton warp and 75/6 black rayon filling or a 75/30 yellow filling. The black cotton is a German product classed as "140/2 hard-twist, Egyptian gassed super combed." We shall appreciate any advice you can offer. (8382)

This trouble is what is generally known in the narrow-fabric industry as "cut filling." It is commonly due either to a faulty construction (usually too dense a texture) or to a faulty condition at the loom. However, other factors may contribute.

The most common cause of cut filling is probably too much weight on the warp yarn, and this is usually due to an attempt to insert too many picks for the density of the warp, or too heavy a filling. Improper reeding is often a contributary factor.

In the present instance, we believe a great improvement can be effected by the use of 150/2 in the warp, instead of 140/2. But your warps are probably all made, and as your design is made, a change in the number of picks is out of order, because the symmetry of the design would be destroyed. Therefore the least expensive solution would be to change the size of your filling, particularly the ground filling. We recommend experimenting with a finer ground filling, and possibly trying a little finer reed, especially a reed made with very fine wires. We further suggest that the reed be carefully inspected for rough places. Reeds that have been carelessly stored or handled often have defects across either side, and these invariably produce imperfect products.

Boiler Water Tests

Technical Editor:

In an article in your May, 1936, issue on control of boiler water, the author states that the water should be tested frequently to make sure that the desired results are being obtained. Will you kindly tell me what tests should be made and how they should be carried out? (8375)

We have referred this inquiry to N. T. Pef, author of the article in question, who replies as follows:

"The four most important tests to be made in conjunction with the control of boiler feed water are determinations of hardness, causticity, alkalinity, and chlorides. The following test methods, which are similar to those published in various engineering handbooks, are sufficiently simple to be performed by the power-plant operator:

"*Hardness.* Place 50 cc. of the water in a 250-cc. bottle. From a burette add gradually soap solution and shake until a permanent lather appears. The amount of soap solution used is proportional to the total hardness.

"*Causticity.* To 100 cc. of water add two drops of phenolphthalein indicator; if the water is caustic, it will turn pink. (It must be mentioned in this connection that one of the primary requirements for boiler water is that it be caustic, that is, have caustic soda alkalinity). Stir and add sulphuric acid until the pink color disappears. The amount of sulphuric acid indicates the causticity. If the water does not turn pink, proceed with the following test, the causticity being zero.

"*Alkalinity.* To the sample from the preceding test add two drops of methyl orange indicator, stir and add sulphurice acid until the yellow color changes to orange. The sum of the acid used in the preceding test and in this test is the total alkalinity.

"*Chlorides.* Still using the same sample, add 4 drops of potassium chromate indicator, then stir and add silver nitrate solution until the yellow color changes to permanent dark red. The amount of silver nitrate used indicates the chlorides.

"In ordering the solutions for these tests the strength should be so specified that for every cc. of the solution or acid used, the hardness, causticity, alkalinity, or chloride will be 1 grain per gal. In this way, all multiplying factors will be eliminated.

"The chloride test is used in connection with the boiler concentration and as a guide in blowing. If the chlorides in the raw water are 1 grain per gal. and in the boiler water 10 grains per gal. the water is said to have made ten cycles, that is, the boiler has evaporated ten times the amount of water it holds in storage. The maximum number of cycles that can be carried without priming should be determined, and this limit should not be exceeded. A sample of condensed steam taken from the steam trap should show only a trace of chlorides; otherwise the boiler is priming and foaming. If that is the case, the blow down should be increased until the chlorides in the condensed steam have been reduced to minimum. At this point the chlorides of the boiler water should be determined and this will be the limit of concentration."

New Machinery and Processes

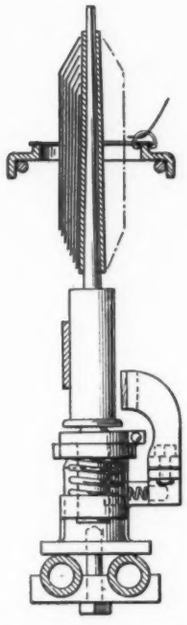
Doubling, Twisting, Winding in One Throwing Operation

• A throwing machine which combines into one operation the work of the doubler-twister, twister, and coner or quiller—and which is therefore of revolutionary proportions in its conception and purpose—is being built by the Federal Machine Corp., 1450 Broadway, New York. This is a new concern, headed by H. Sweetbaum, of H. Sweetbaum & Co., dealers in raw silk and thrown yarns.

The machine is based on a patent granted to Joseph P. McHugh, of Scranton, Pa., on June 16, 1936, under the number 2,044,621. As now constructed, however, the machine differs from the one originally conceived by the inventor. Mr. McHugh had in mind consolidating into one operation all of the strictly throwing processes, including skein winding. However, winding yarn direct from swifts into anything but a relatively crude package has never been very satisfactorily accomplished commercially, mainly because of the difficulty in maintaining uniform tension; and it is no doubt for the same reason that Federal is building at least its first machines to take yarn from the throwing bobbins produced by skein winders.

The machine is in effect a modified doubler-twister. It operates on the down-twist principle, employing a ring and traveler. One might almost say it is merely a rationalization of throwing, since, as is well known, the purpose of an upstroke twister is simply to add twist to yarn which has already been twisted to some extent by the doubler-twister. Therefore the task of the designer was primarily one of refining the doubler-twister to the point where it could put in all the twist necessary, even high-turn crepe. And then it was a logical step to provide for the use of a quill or cone for receiving the twisted yarn.

The first refinement to consider is one that is very much in line with recent progress made in other departments of textile manufacture—namely, the pulling of yarn from stationary delivering bobbins over the ends of those bobbins rather than pulling from the sides of revolving bobbins as in the ordinary doubler-twister. This alone provides a more uniform tension; but in addition an automatic washboard tension is provided for each singles yarn. The composite strand passes several times around a feed roll of special design which inserts several turns of twist in the yarn before it is presented to the ring and traveler.



MULTI-PURPOSE SPINDLE

A new builder motion is provided, and this produces the wind illustrated by the accompanying diagram.

In cotton manufacture this particular wind has been called a "combination" wind, since the layers run for a considerable distance along the bobbin, as in warp wind, and yet each layer begins and ends a little higher on the bobbin than the previous layer, as in filling wind. No one layer runs the entire length of the bobbin, but each is parallel to the bobbin barrel for a considerable part of its traverse and then (with the exception of the first layer) runs diagonally to the bare barrel, as in filling wind. This type of build has been found, in cotton, to permit high spindle speeds without excessive strain on the yarn; and the Federal machine is being successfully operated at 10,000 r.p.m. Two cams are naturally required in the builder motion, one for the traverse itself and one for raising the traverse at each stroke.

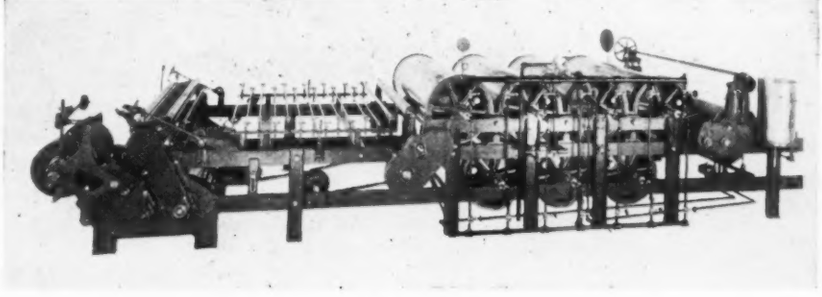
This build is of course primarily responsible for the fact that ordinary quills and certain special cones can be wound. The cones, made by Pairpoint Corp., New Bedford, Mass., are long and slender, as may be seen in the diagram. The spindle is shaped to fit them snugly. The long tapers at top and bottom of the yarn package permit the diameter of the package to be built out to an extent limited only by the size of the ring; and ring sizes may range up to 5 in. The cones are ready for knitting or warping. The quills, which may contain crepe yarn, can be used in shuttles without rewinding—although presumably, if they contain crepe, they must be subjected to a conditioning or twist-setting operation before weaving.

The advantage of such a machine in the elimination of processes is obvious. In addition, Mr. Sweetbaum—supported by a spokesman for Chipman Knitting Mills, Easton, Pa., where several of the machines are in operation—lays particular emphasis on an improvement in yarn quality. The yarn is entirely free of ply knots and, due to the reduced handling to which it is subjected, is less mussed and soiled. Since tension is believed capable of aggravating any unevenness already present in yarns being twisted, the new machine, by applying less than normal tension, is expected to insure greater evenness in the completed yarn.

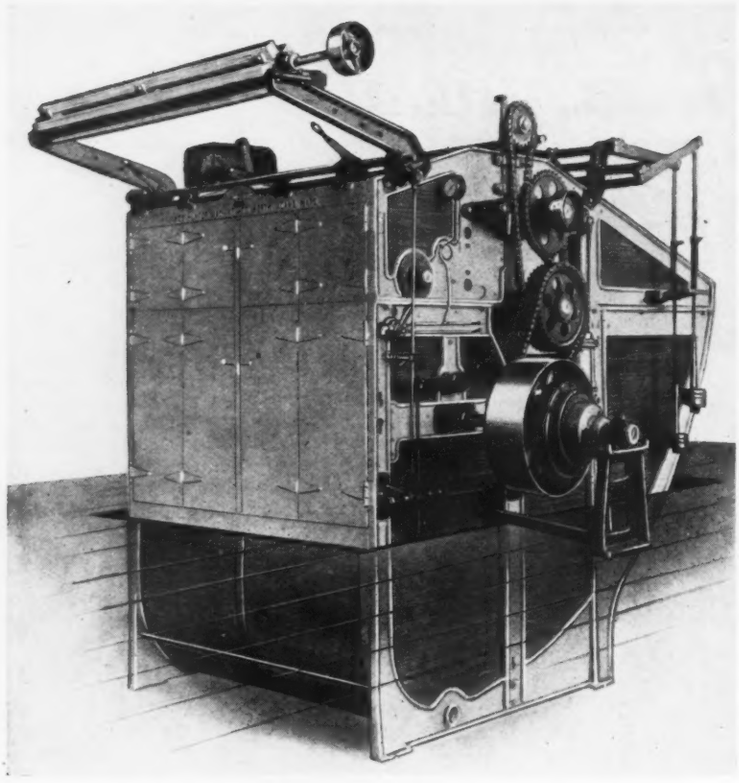
Seven-Cylinder Combination Sizer

• To meet the needs of mills which desire from time to time to use both the cotton and the silk methods of sizing rayon, Charles B. Johnson, Paterson, N. J., has brought out a new seven-cylinder sizer which may be converted easily from one system to the other.

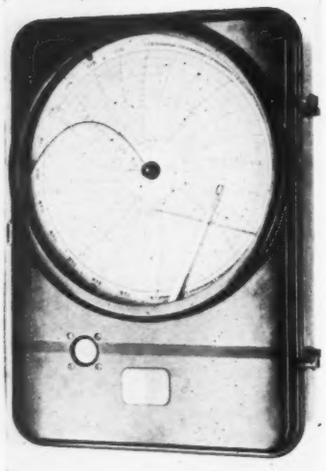
The feature of the machine is a combination end which may be moved up close to the last drying cylinder for silk-system processing, or moved out to allow space for the framework holding the



SLASHER



FULLING MILL



FLOW METER

PANEL

split rods and expansion comb of the cotton system.

All that is necessary to change from one system to another is to take out a few bolts, take out or put in the special parts required by the cotton method, and bolt the end into place again. The delivery end is arranged to revolve the beam clockwise for the silk system, when papers are to be inserted, or counter-clockwise for the cotton system, without altering the drive mechanism.

The change-over is a matter of a few hours work, and the manufacturer points out that the mill can have its choice of either system without any great investment in extra parts.

Multiple-Roll Fulling Mill

• Three or four sets of narrow face rolls placed side by side are the feature of a new fulling mill developed by James Hunter Machine Co., North Adams, Mass. Each narrow set of rolls has its own crimping box, and the fulling mills are built with three or more compartments or partitions, so that each single string or pair of strings has its own set of rolls, its own crimping box, and its own compartment in which to run. The arrangement is designed to make it possible to run dark and light shades in the same mill and also to secure uniformity of felting.

Among the mechanical details of the new fulling mill are the following: frames of heavy cast iron, machined at all points of contact; lining of 3-in. cypress for the back and 2-in. for the sides, with stainless steel available as an extra; rolls of either wood or sectional rubber in any desired width of face; all top and bottom doors at the front of the mill hinged in the middle for ease of operation; crimping boxes of either stainless steel or maple; boxes held in heavy side frames to eliminate warping; cloth guides either deep English throats or the new Diamond eye; all adjustments for throats and top-roll pressures can be made while the machine is in operation; roller bearings throughout and roller-chain drive on both sides of the unit; drive which makes it easy for the operative to start or stop the mill; new-type stop motion which may be equipped with either brass or stainless-steel pins.

A new hydraulic control to apply pressure to the top rolls can be furnished as an extra on the fulling mill, replacing the usual handwheel or spring. Hydraulic chambers are fitted to both sides of the mill and are connected with the necessary water pipes, which are controlled by a four-way valve. When water under pressure is forced into the top of the hydraulic cylinders, the top rolls are pulled down to the desired point. To relieve the pressure, water is forced into the bottom of the cylinders. No booster pump is required and ordinary water pressure is sufficient.

Electric Flow Meters

• The addition of a complete line of electric flow meters for steam, liquids, and gases has been announced by Bristol Co., Waterbury, Conn. These flow meters operate on the Bristol Metameter principle of telemetering to transmit readings to a distant point and can be furnished for recording, integrating, and indicating flow. The readings are transmitted over a simple two-wire circuit, telephone circuits included, which does not enter into the calibration of the instruments. All electrical contacts are inclosed in glass, and a standard Bristol meter body is employed to measure the differential across an orifice.

Both the transmitter and the receiver are equipped with moisture-, fume-, and dust-proof aluminum alloy cases. Conduit openings are provided so that the instrument may be used with modern wiring systems.

Panelboard

• For general 115-, 115/230-volt a.-c. distribution with branch circuits ranging from 15 to 50 amp. capacity. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has brought out a low-cost Nofuze panelboard.

Bus arrangements for single phase, 3/2-wire, and 3-phase 4-wire services are provided. Branch-circuit ratings of 15, 20, 25, 35, and 50 amp. are available. The multi-breaker units employed permit a compact design, the dimensions being 15 in. wide by 4 in. deep, permitting mounting in such places as the face of columns.

The new panelboard, together with the low-cost load center and the standard line of Nofuze circuit-breaker lighting and power panels, now makes circuit-breaker protection possible and economical in all installations from the smallest to the largest.

Graduated Monel Pail

• Whitehead Metal Products Co., Inc., 304 Hudson St., New York, is marketing

a graduated Monel pail in standard sizes of 12, 14, and 16 qt. Bottom and sides are of 0.037-in. Monel metal electrically seam welded. The chime is 0.078 in. thick and is seam welded to project ½ in. below the bottom. Monel metal ears are spot welded to the sides. The handle is constructed of $\frac{5}{16}$-in. rod and the rim is rolled over $\frac{3}{16}$-in. wire. There are no rivets.

Steam-Generating Unit

• Three companies, General Electric Co., Schenectady, N. Y., Babcock & Wilcox, Barberton, O., and Bailey Meter Co., Cleveland, O., collaborated in the production of a new type of steam-generating unit known as the Steamotive.

Objectives sought in the design of the new equipment were high steam pressure and temperature, minimum weight and size per unit of steam produced, wide range of capacity with ability of the unit to respond quickly to wide variations in load conditions, adaptability to wide range of fuels, completely coordinated auxiliaries, completely coordinated automatic control, and units of simple design in sizes small enough to be portable. The units are intended for capacities of from 2,000 to 10,000 hp.

In the operation of the Steamotive, the flame and gases pass from the burner through the completely water-cooled furnace, thence into the superheater, flowing around the separator, through the economizer and air heater, and up the stack. The air for combustion leaves the blower at relatively high pressure, passing through lanes intersecting the stack, and down around the air-heater tubes to the oil burner. There is no induced draft fan, the blower forcing the air through the burner and furnace under pressure.

The feedwater enters the economizer inlet header, and, after leaving the outlet header, is divided into several circuits, all of which form the floor, sides, and roof of the furnace, as well as the sets of loops forming the boiler screen. All the steam is generated in these furnace and boiler circuits, and enters the separator with a surplus of water in each circuit. From the separator, the dry steam goes through the superheater, and directly to the main turbine. The water from the separator is called the spillover, and it passes through a heat exchanger to the hot well, where it mixes with the condensate, and is re-fed to the boiler by the feed pump.

Truck Caster

• A Monel caster for trucks, hampers, and wheeled conveyances of all kinds has been placed on the market by Bassick Co., Bridgeport, Conn. Available in both the stationary and swivel-roller type, it is adapted to use in dyehouses and bleacheries where corrosive materials are likely to be spilled on the floor. Metal parts of the casters are entirely of Monel metal, including bearings, shaft, and spacers. Wheels are made of a special rubber composition.

Photo-Cell

• Under the trade name of Electrocell, a sensitive, self-generating photo-electric cell, which can be used for color analyzing and the matching of textiles, is being distributed by Dr. F. Loewenberg, 10 East 40th St., New York. The sensitivity of Electrocell elements amounts to 480 microamperes per lumen, which is sufficient to take accurate measurements without the use of electrical indicating devices. The cells are stated to be permanently stable and to have unlimited life. They are available in a number of sizes, the round shapes ranging from ⅜ to 2⅜ in. and the rectangular shapes from 1½ to 2 in. The cells are delivered either mounted in a Bakelite case or unmounted. The active elements has the shape of a plain, coin-like metal disk.

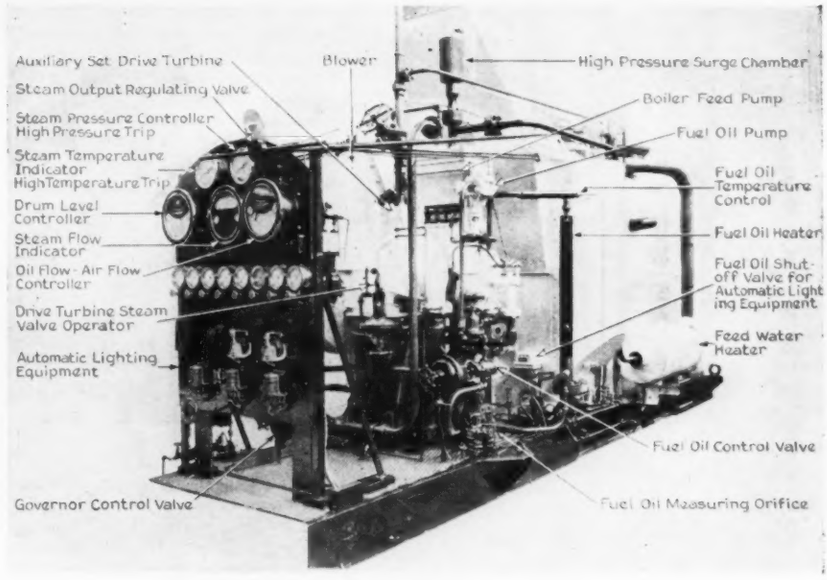
Galvanized Sheet

• Full commercial production of a new kind of galvanized sheet that assures a good paint bond on iron and steel products has been announced by American Rolling Mill Co., Middletown, O. Armco Paintgrip sheets, the manufacturer says, are chemically treated to produce a finely crystalline phosphate coating which in itself is neutral to paint (being neither acid nor alkaline) and keeps the paint from direct contact with the zinc surface. This coating is an integral part of the sheet and is slightly granular in nature. Formation of a Paintgrip coating on metal is dependent upon the fact that phosphoric acid solutions will dissolve zinc phosphate within certain definite limits. Passing zinc coated iron or steel products through such a solution results in the formation of the Paintgrip coating which becomes an integral part of the metal surface at the point of solution. Reaction takes place with the evolution of hydrogen, continuing until the metal surface is completely converted to a crystalline phosphate coating.

Static Eliminator

• A line of metal-incased static bars has been placed on the market by Simco Corp., 4929 York Road, Philadelphia. The bars vary in outside diameter from ¼ to 1¼ in. and are said to be capable of

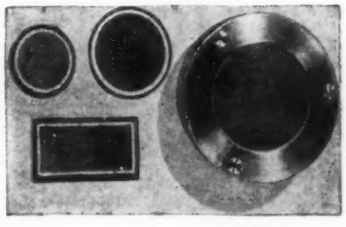
STEAM UNIT

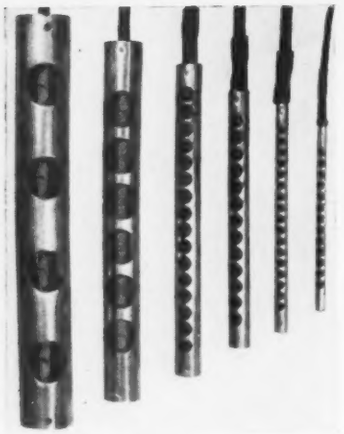

Auxiliary Set Drive Turbine
Blower
High Pressure Surge Chamber
Steam Output Regulating Valve
Boiler Feed Pump
Steam Pressure Controller High Pressure Trip
Fuel Oil Pump
Steam Temperature Indicator High Temperature Trip
Fuel Oil Temperature Control
Drum Level Controller
Fuel Oil Heater
Steam Flow Indicator
Fuel Oil Shut-off Valve For Automatic Lighting Equipment
Oil Flow - Air Flow Controller
Drive Turbine Steam Valve Operator
Feed Water Heater
Automatic Lighting Equipment
Fuel Oil Control Valve
Governor Control Valve
Fuel Oil Measuring Orifice

PAIL

CASTER

CELL





ELIMINATOR

discharging highly charged materials at production speeds.

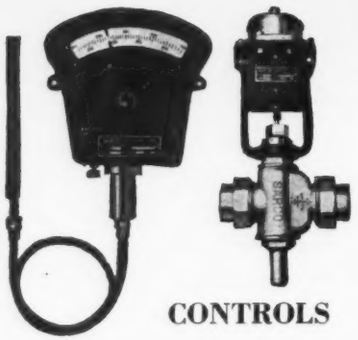
The outer casing, which is brass, has a series of holes drilled in it and houses a complete static bar which is suitably insulated. Each point of the static bar comes in the center of a hole in the casing below the level of its inner wall.

The manufacturer states that these metal-incased bars work on a new principle which makes it possible to get a bar efficiency equal to that of a bar with exposed points and that there is no suppressing action by the grounded outer casing. The bars may be installed at any point in a given machine. They require no clearance.

Control Instruments

• Sarco Co., Inc., 183 Madison Ave., New York, announces the completion of a new line of electric temperature controls for heating, air conditioning, and industrial processing. The developments are based on patents and designs the company acquired from the liquidated Wilbin Instrument Corp.

The new line includes line-voltage thermostats, ranging from simple, room types to multiple-switch, dial-thermometer thermostats. Hydraulically operated motor valves for steam, gas, oil, water, or brine, are also included.

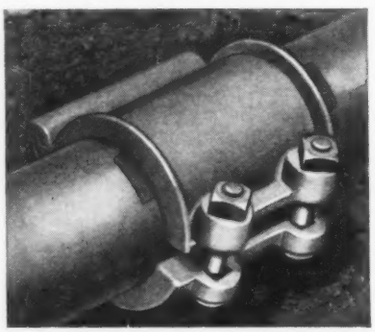


CONTROLS

Clamps for Leaks

• Easily applied clamps for stopping leaks in pipes carrying air, gases, or liquids are being produced in a new design by M. B. Skinner Co., 3856 W. Sample St., South Bend, Ind. Except where the pressure is extremely high, the clamps can be applied while the pipe lines are in service. The metal used is stated to be of high tensile strength and of uniform density and hardness.

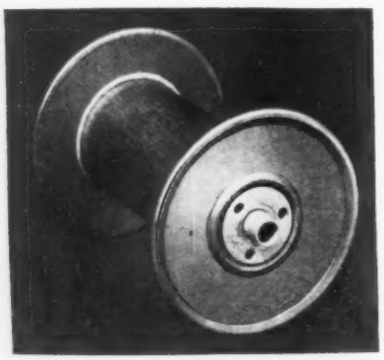
CLAMPS



NEW DYES & CHEMICALS

Lubricant and Plasticizer

• Development of lubricant for yarns and fabrics is announced by Glyco Products Co., Inc., 148 Lafayette St., New York. The product, known as Aqualube, is described as a water-soluble, non-hygroscopic, and non-sticky, light-yellow liquid, which does not dry, crystallize, or turn rancid. In addition to acting as a lubricant, it is said also to be an excellent plasticizer for gums, casein, etc.



Steaming bobbin of Lestershire Spool & Mfg. Co., described last month.

Vat Dye

• National Aniline & Chemical Co., Inc. announces the following new product:

Carbanthrene Red Brown R double paste, a vat dye yielding reddish brown shades of good fastness to sunlight; very good fastness to sea water; washing, perspiration and alkali; and excellent fastness to cross dyeing and water. It reduces readily, levels well, and is suitable for use in open tubs or machines.

Mercerizing Auxiliary

• A new wetting agent for use in mercerizing yarn and piece goods has been introduced recently by General Dyestuff Corp., 435 Hudson St., New York. The product, Leophen K, is a slightly viscous, brownish liquid which dissolves to a clear solution in mercerizing liquors. It is stated that it does not precipitate, even on prolonged standing; that it does not form any troublesome foam; and that caustic soda contained in the rinse waters can be recovered by concentration. Addition of from 5 to 10 parts of Leophen K to 1,000 parts of caustic solution is recommended when mercerizing gray goods; for boiled-off yarn, 2½ parts per 1,000 is said to be sufficient.

DuPont Dyes

• E. I. duPont de Nemours & Co. announces the following new products:

Diagen Red M2B Pat, a new stabilized azoic color for printing, yielding brilliant red shades which withstand laundering and which are of good fastness to light.

Pontamine Yellow S3G, a direct dye producing greener shades than Pontamine Yellow SXG; dyeings are of good fastness to washing and perspiration, and exhibit a better fastness to chlorine than do the majority of direct colors.

Pontachrome Black P2B, a chrome color similar in properties to Pontachrome Black PV, but a trifle greener in shade and superior in exhausting properties and fastness to severe fulling.

New General Dyes

General Dyestuff Corp., 435 Hudson St., New York, has recently announced the following new products:

Direct Fast Orange 5 RAS, a direct color producing on cotton bright reddish orange shades of good fastness to light and washing; it leaves wool practically clear and, therefore, can be used for speck dyeing.

Toluylene Yellow RL, a direct dye for cotton, rayon, and silk, which produces dischargeable shades of moderate to good fastness to light.

Diazo Fast Yellow RR, a developed color for cotton, rayon, and silk, which yields dischargeable shades of fairly good fastness to light.

Astra Cyanine B, a basic dye, yielding exceptionally brilliant and clear greenish blue shades; it is not recommended for colored discharges, but can be used for direct printing and for resists under Aniline Black.

Calco Dyes

Calco Chemical Co., Inc., announces the following new products; Calcoloid Yellow 5GD, a dispersable vat color; and Calcomine Blue RRW, a direct dye similar in its properties to Calcomine Blue RW, but exhausting better on tin-weighted silk and on rayon when applied in heavy percentages.

NEW PUBLICATIONS

Knitting Full-Fashioned Hosiery, by M. C. Miller, M. E.; McGraw-Hill Book Co., New York; $5.00.

At last it is out—this much-needed first book in English on the design and operation of full-fashioned hosiery machines. When Mr. Miller began writing the articles which form the backbone of the new book, and which ran serially in TEXTILE WORLD from 1930 to 1936, literature on the subject was appallingly thin. Even today there are few authors who write extensively on this intricate and yet intriguing and extremely important department of knitting technology.

In the six years since this heavy task of writing was begun, numerous changes have occurred in the field that have necessitated revisions of the earlier chapters. During this period also, ways have naturally occurred to the author for amplifying and clarifying his earlier discussions; and in a book which reaches many readers who, unlike the readers of TEXTILE WORLD, are not experienced in knitting matters, it is necessary to include certain elementary discussions of knitting principles. As a result of all this, the book cannot be considered to be merely a reprint of the original articles.

The book has some important advantages over the serial. The detailed thoroughness of the treatise made it difficult for the magazine reader to maintain the continuity of thought from one instalment to another, and he was frequently faced with the necessity of hunting up previous instalments in order to re-examine various diagrams to which later reference had to be made. Both of these difficulties are eliminated in the book, and Mr. Miller's remarkable ability to write lucidly and always directly to the point can now be appreciated to its full extent.

The scope and usefulness of the book can be judged to some extent by the chapter headings: Knitting Principles; the Stocking; Needle Motion; Frames and Sinker Motions; Coulier and Carrier Motions; Knockover, Take-up, and Thread-Tension Motions; Narrowing Mechanism; Narrowing-Motion Cams; Cam Adjustments, Stitch Regulation, and Other Motions; Concurrent Movements of Sinkers, Knockover Bits, and Needles; Erecting and Aligning the Mechanism; Assembling and Adjusting the Machine; Concurrent Movements When Narrowing; Loop Distortion While Narrowing; Fabric Loop Formation and Selvages; Yarn Feeding and Sinking; Selvage Formation; Mesh, Lace, and Picot; Yarn Carriers and Their Stops; Carrier-Stop Spindles; Split and Spliced Fabrics; Diagonal Split Sutures; Herringbone Diagonal Split Sutures and Selvages; Other Sutures; Two-Needle Lap Mechanism; Setting Up and Turning Welts; Recent Trends. No parts of the last six chapters appeared in the original series.

A feature of the book is the large number of diagrams, each drawn to scale, and many close-up photographs.

The Cotton South and American Trade Policy, by Peter Molyneaux; National Peace Conference, New York.

The people of 10 southern states face a crisis as a result of expansion in foreign production of cotton and consequent sharp reduction in sales abroad, says Peter Molyneaux, editor of the *Texas Weekly*, in this book which is the 17th volume in the World Affairs series published by the National Peace Conference.

Molyneaux's theory is that cotton had not been developed abroad previously because capital considered the risk too great. The chief deterrent was the established supremacy of American cotton. However, development is now being carried forward "with absolute confidence in the future primarily because of the maintenance of the traditional trade policy of the United States," he says.

"In reaffirming its policy of strictly limiting the sale of foreign goods within its own borders . . . the United States thus made it to the interest of other nations to buy as little of American goods as possible," he concludes.

Mr. Molyneaux praises the move, under Secretary Hull, toward reciprocal trade agreements, but states that progress in that direction depends upon the extent to which the policy receives the support of an "aroused and alert public opinion."

BUSINESS NEWS

• **C. L. Upchurch & Sons, Inc.,** Athens, Ga., announce that they have merged with the Greenville Textile Machinery Co., Greenville, S. C., and the Southern Textile Machinery Co., Charlotte, N. C. All units will operate hereafter from one office under the firm name of C. L. Upchurch & Sons, Athens, Ga.

• **Johnson & Bassett, Inc.,** Worcester, Mass., report installations of their giant package mule in the following mills: Shuler & Benninghofen, Hamilton, Ohio; Orr Felt & Blanket Co., Piqua, Ohio; Atlanta (Ga.) Woolen Mills; James Lees & Sons Co., Bridgeport, Pa.; Firth Carpet Co., Firthcliffe, N. Y.; Riverdale Woolen Co., Inglewood, Ont.; Rock River Woolen Mills, Janesville, Wis.; Dyersburg (Tenn.) Cotton Products, Inc.; Manchaug (Mass.) Mills, Inc.; Charlton Woolen Co., Charlton City, Mass. C. E. Williams, vice-president and general manager of the company, states that at the present time—only six months after the start of their advertising campaign on this machine—they have exceeded their total sales quota for the year by about 11% and many more sales are pending.

• **Howard Bradshaw Loom & Reed Works,** Anderson, S. C., announces that the home office will be maintained in Columbia, S. C., hereafter. The Anderson plant will continue to serve textile plants of the Piedmont section and parts of North Carolina and Georgia, for loom reeds, etc.

• **National Oil Products Co.,** Harrison, N. J., has bought a new plant at Cedartown, Ga., for manufacture of products used in textile processing, paper milling and other industries, Charles P. Gulick, president, announced recently. The property, consisting of 52 acres and 10 buildings, was owned formerly by the U. S. Finishing Co., which has centralized operations in Hartsville, S. C.

• **Terrell Machine Co.,** Charlotte, Ga., announces that R. Bigham Smith, formerly with H & B American Machine Co., Atlanta, Ga., is now with that company and will handle Terrell lines in Georgia, Alabama, and part of Tennessee, with headquarters in Atlanta.

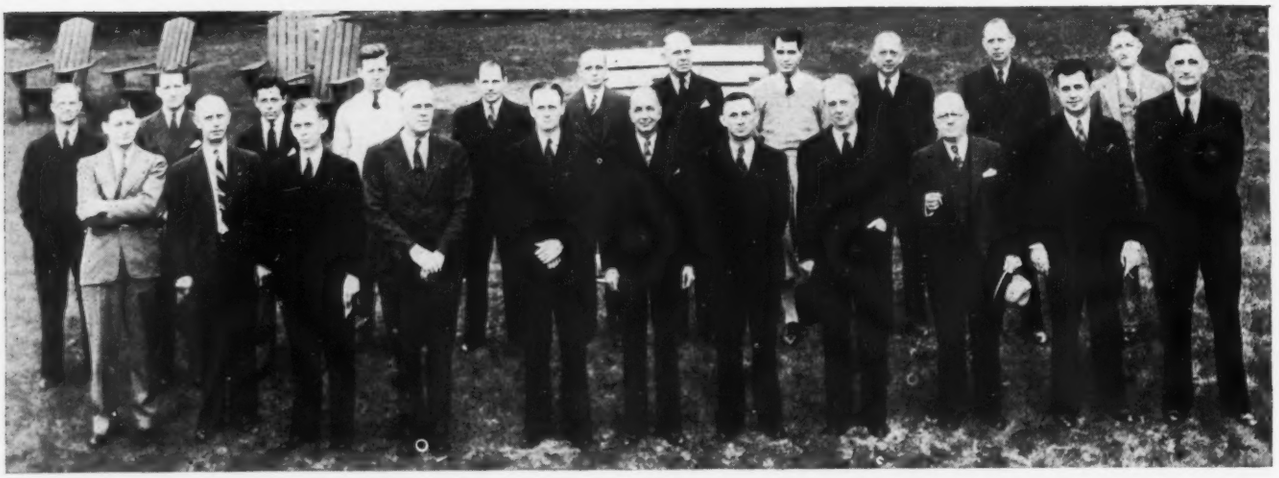
• **Charles Bond Co.,** Philadelphia announces that Harold C. Smith, Jr., has been added to the sales force and is covering North Carolina and Virginia.

• **United States Testing Co.,** Inc., has developed various merchandise testing and labeling plans which have been effectively promoted by manufacturers and retailers during the last year. Believing that testing has not expanded in retailing as rapidly as it should, the company has devised a plan to give stores a complete testing service which will aid buyers and the advertising and promotional departments. A branch of the testing company can be installed in the store on a weekly fee basis. The testing company will establish only 50 units, only one to each city. The first unit will be installed this month.

• **American Chain & Cable Co., Inc.** is the new name of an old company, well known previously as American Chain Co., Inc. For many years a maker of

Plant at Cedartown, Ga., bought by National Oil Products Co. for use as Southern base.

A GOODLY REPRESENTATION OF SOUTHERN MILL PURCHASING AGENTS



GROUP which attended the meeting of the Carolinas-Virginia Purchasing Agents' Association at Greensboro, N. C., Jan. 22 and 23. Left to right, front row: R. E. L. Holt, Jr., Burlington Mills; C. F. Williams, Erwin Cotton Mills; J. M. Geer, Marshall Field & Co.; L. S. Neal, Roanoke Mills Co.; Harold Dry, Cannon Mills Co.; W. G. Thomas, Duke Power Co.; J. Y. Phaar, Cannon Mills Co.; H. M. Hunter, Proximity Mfg. Co.; W. S. Pepperell, Burlington Mills; R. V. Spangler, Duke Power Co.; Hext M. Perry, President of the Association, Greensboro, N. C. Rear row: J. H. Arthur, Hannah Pickett Mills; Frank Coker, Sonoco Products Co.; George Waterhouse, Kendall Mills; O. G. Sawyer, Duke University; J. J. Preisinger, Aluminum Co. of America; W. H. Pittman, State of North Carolina; J. V. Garrett, High Point, N. C.; G. M. Hill, Univ. of N. C.; Arthur C. Goodwin, Proximity Mfg. Co.; W. D. McCullum, Marshall Field & Co.; D. B. Owens, Riverside & Dan River Cotton Mills.

all-purpose chains, the company has since 1924 become important in production of wire rope or cable, which fact caused the directors of the corporation to enlarge the name to American Chain & Cable Co. General offices will remain at Bridgeport, Conn.

• **Draper Corp.** has reopened Standard Looms plant, at East Spartanburg, S. C. Officials announced that within the next few months 200 persons would be employed there in production of textile machinery.

• **Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.,** Passaic, N. J., has opened a new West Coast branch office and warehouse at 778 Brannan St., San Francisco, Calif. This branch will be under the management of A. R. Bradshaw, Pacific Coast representative.

H & B American Revamps Plant and Realigns Organization

AS a further step in a modernization and reorganization program H & B American Machine Co., Pawtucket, R. I., has taken over the patents on the long-draft system invented by Thomas Harris (described in TEXTILE WORLD, January, 1934, page 106) and will bring out a roving frame of new design to produce 10-hank or finer roving direct from sliver at a spindle speed of 2,100 r.p.m. The company has also developed a five-roll super-draft roving frame, provided with a special folder arrangement, which will draft over twenty.

Several important additions have been made to the personnel of the company. Irving R. Rowe, formerly chief engineer of Atwood Machine Co., Stonington, Conn., has been placed in charge of development work on a line of rayon machinery for H & B American Machine Co., and some of this equipment is already being built for rayon producers. As previously noted, Otto A. Belger has been added to the staff in connection with sales, service, and research. Harold E. Fuller, previously with Bird & Son, Inc., has been placed in charge of personnel; and three engineers and four practical mill men have been added to the engineering and research division. In the sales department, C. M. Powell has been added to the Charlotte, N. C., office, and George W. Murphy has joined the staff at the Atlanta, Ga., office. Both Mr. Powell and Mr. Murphy have had years of mill experience.

A thorough modernization program has been carried out at the company's shop and foundry in Pawtucket. Among the new machines that have been added are the following: machine for cleaning castings at a cost of nearly $7,000; molding machines; both Cincinnati and Brown & Sharpe types of milling machines; high-speed drills and tapping machines; fourteen Potter & Johnson automatic lathes, which increase department production 40%; electric polishing heads and special buffing machines in spinning- and twisting-ring department, in conjunction with a new process of hardening, rounding, and polishing; Cincinnati centerless grinders and other equipment in fluted-roll department; Niagara bending machines in tin shop; new disk cut-off wheels in thread-board department which increase production over 30%; 35-ton Bliss presses for multiple-die work; high-speed drills and circular saws in pattern shop; clearer, cutting, sanding, and riveting machines in carpenter shops; etc.

• **National Aniline & Chemical Co.,** Buffalo, N. Y., has begun construction of new one-story addition to factory unit No. 24, estimated to cost over $50,000, including equipment.

• **Paterson Textile Soap Co.,** North Haledon, N. J., has been organized with capital of 1250 shares of stock, no par value, to manufacture textile soaps and allied products. Company represented by Anton Hohnhold, North Haledon.

• **National Industrial Advertisers Association,** Chicago, Ill., has just completed its annual survey of industrial advertising budgets. The report includes many tables and charts in which 260 budgets are analyzed both collectively and in separate company groups.

• **Sonoco Products Co.,** manufacturers of paper cones, tubes and a variety of other products used in the textile industry, announces an expansion program involving expenditure of about $500,000. Excavation has been started for a three-story plant addition to provide enlarged manufacturing facilities and additional warehouse space for finished products, and also for a new power plant. The new building is adjacent to the main plant at Hartsville, S. C. Fiske-Carter Construction Co., Greenville and Spartanburg, S. C., has the general contract.

• **Southern Textile Machinery Co.,** Paducah, Ky., reports that although flood conditions have been bad they are resuming operations as the flood waters recede.

• **Rawlplug Co., Inc.,** announces that W. F. Holtzman, has been appointed manager of the Rawlplug Washington Co., headquarters at 50 Florida Ave., N. E., Washington, D. C. The Rawlplug Co., Inc., main office and plant located in New York, manufactures anchoring devices, masonry drills, etc.

The Personal Page

Robert Lassiter, Charlotte, N. C., chairman of Mooresville (N. C.) Cotton Mills who was recently appointed chairman of the board of the Federal Reserve Bank of Richmond, announced Jan. 6, the appointment of **George S. Harris,** executive vice-president of Springs Cotton Mills, Lancaster, S. C., and of **George W. Wright,** president of Republic Cotton Mills, Great Falls, S. C., as members of the board of directors of the Charlotte, N. C., branch of the Federal Reserve Bank of Richmond.

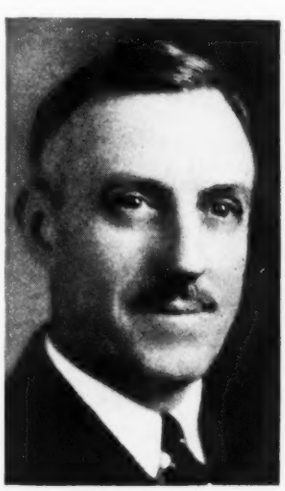
Paul A. Draper, head of Draper & Co., Boston, has been elected to the board of directors of Nashua Mfg. Co., Nashua, N. H. **S. St. John Morgan,** Boston banker, is another new director of the concern. **William H. Cadwell,** long associated with the textile industry in Nashua, N. H., has retired as a director.

B. B. Gossett has been elected president of the Gossett Mills, Anderson, S. C., succeeding his father, the late James P. Gossett.

O. Max Gardner, formerly Governor of North Carolina, and Washington counsel for the Cotton-Textile Institute, has formed a law partnership with his present associates, **Fred W. Morrison** and **George Rogers,** under the firm name of Gardner, Morrison & Rogers, with offices continuing in the Woodward Bldg., Washington.

Louis Bachmann, president of L. Bachmann & Co., New York, and of Uxbridge (Mass.) Worsted Co., has been elected director of the Public National Bank and Trust Company, New York.

R. E. Benson, Jr., has been made a partner of Woodward, Baldwin & Co. Mr. Benson joined the organization two years ago after having been with Southeastern Cottons, Inc., and its predecessor for sixteen years.



EARLE MAULDIN, who has been appointed an additional Southern Editor of* Textile World *with headquarters at Atlanta as described in our last issue.

Ralph C. Anderson has been elected president of Carolina Dyeing & Winding Co., Mount Holy, N. C., succeeding **Edwin F. James,** and **Carl C. Sorensen** has been elected vice-president. Both of these men have been associated with the company for some time. **Paul Stevens** has resigned as treasurer and has been succeeded by **Arthur L. Hobson, Jr.**

J. D. Pell, formerly general manager of Angle Silk Mills, Inc., Rocky Mount, Va., has been elected president and treasurer of the company.

D. C. Collier has been appointed representative of Joseph Bancroft & Sons Co.'s Reading Mill, Reading, Pa. His office will be at 40 Worth St. New York Mr. Collier was formerly treasurer and general manager of Collier Mills,

GEORGE A. SLOAN, former president of the Cotton-Textile Institute, has been elected a director of the United States Steel Corp. Mr. Sloan recently resigned from George A. Sloan & Co., which had been selling agents for the Amoskeag Mfg. Co.

Inc., plants at Barnesville and Macon, Ga. and later was president of Southern Mfg. Co., Athens, Ga.

Joseph Metcalf, 2nd, agent of Farr Alpaca Co., Holyoke, Mass., was elected a director of that company at a meeting of the board. He succeeds **Dr. Frank A. Woods,** who resigned because of poor health.

C. S. Smart, superintendent of Locke Cotton Mills Co., Concord, N. C., has resigned to become one of the owners and operators of Kinston (N.C.) Cotton Mills. He is associated with **L. M. Carpenter,** of Salisbury, N. C., in a new textile concern which has taken over property formerly known as Caswell Mills, Inc.

E. E. Yake, executive vice-president of Sulphonated Oil Manufacturers' Association for a little over two years, has resigned to accept a position as assistant to the president of Royce Chemical Co., Carlton Hill, N. J. Mr. Yake was formerly a vice-president of Worthington Pump & Machinery Corp., Harrison, N. J., joining the Sulphonated Oil Manufacturers Association in the NRA era. Prior to this, Mr. Yake was works manager of Gilbert & Barker Mfg. Co., Springfield, Mass.

WILLIAM B. WARNER, chairman of the executive committee of the American Woolen Co., and president of the McCall Co., has been elected president of the National Association of Manufacturers.

L. A. Funderburk has assumed his new duties as general superintendent of J. & J. Spinning Mills, Maiden, N. C.

W. H. Hardeman, former division manager and superintendent of Union Division of Consolidated Textile Corp., La Fayette, Ga., closed for two years, has been transferred to Shelby, N. C., where he has become manager of the Ella Division of the same company, which has been reopened.

George McDowell has been transferred from the Philadelphia to the New York office of Hemphill Co., Pawtucket, R. I.

V. H. Bruneau, for the last five years manager of St. Croix mill of the Canadian Cottons, Ltd. at Milltown, N. B., has been given a leave of absence. During his absence, the mill is under the temporary co-management of **J. Irving Roy,** of Montreal, and **Eric Wendler,** of Reading, Pa. Mr. Bruneau is not expected back in his office at the St. Croix mill until late in the spring or during the summer.

G. O. Lipe, former superintendent and general manager of Linn Mills Co., Landis, N. C., has been elected president, succeeding the late Daniel Branson Coltrane. **P. K. Dry,** assistant superintendent, has been elevated to the position of superintendent.

Hugh D. Camp has become general manager of Chesapeake Camp Corp., Franklin, Va., a paper manufacturing company, following his resignation as vice-president and general superintendent of Roanoke Mills Co., and vice-president of Patterson Mills Co. Roanoke Rapids, N. C.

Raymond O. Roderick, former superintendent of production at Standard Textile Products Co., Peekskill, N. Y.,

has been promoted to plant manager, succeeding **J. B. Davis,** who resigned to become vice-president of International Printing Ink Co. **Eugene Travis** has been made secretary, succeeding **Harold Conklin** who left to join the ink company also along with **Herbert S. Thompson,** chief engineer and assistant manager.

Arthur A. Worth has resigned as superintendent of the woolen yarns division of Horner Bros. Woolen Mills, Eaton Rapids, to return to American Woolen Co., Enfield, N. H.

R. P. Robinson, formerly agent for American Woolen Co., Dracut, Mass., and more recently with Nashua (N. H.) Mfg. Co., has gone into business for himself in Lowell, Mass., dyeing rayon top.

Donald Price has joined the research staff of National Oil Products Co., Harrison, N. J. For a number of years Dr. Price was a member of the Columbia University faculty.

J. D. Cassada has been made assistant manager in charge of operations at Roanoke Mills Co., No. 2, Roanoke Rapids, N. C. He was formerly superintendent of this mill.

John M. Moore has resigned as superintendent of Laurens (S. C.) Cotton Mills, where he has served for twenty years. The name of his successor has not yet been announced.

David K. Mackay, of C. K. Eagle & Co., Inc., New York was elected president of the Silk Travelers' Association, Inc., at the annual meeting and election. Others elected were: **Mortimer J. Carrigan,** of L. & E. Stirn, Inc., first vice-president: **Walter P. Taylor,** of Nickel, Barrett, Lieberman & Quinn, second vice-president: **H. W. Smith,** of Clifford & Lawton, Inc., secretary: and **W. C. Leopoldt,** of Payet-Volta-Miller, Inc., treasurer.

A. B. Wason, of the New York office of Cooling & Air Conditioning Corp., Division of B. F. Sturtevant, Boston, has been transferred to Greensboro, N. C., where he will specialize in textile installations.

J. W. Dayton has joined Merck & Co., Inc., Rahway, N. J., and will devote his efforts to the distribution of textile specialties.

George McDowell, who has been with Hemphill Co., Pawtucket, R. I., for nineteen years and in charge of the Philadelphia territory for the last twelve years, has been transferred to the company's New York office.

Martin M. Stuart, manager of glycerine sales department of Colgate-Palmolive-Peet Co., Jersey City, N. J., has also taken over the duties of manager of industrial sales department, succeeding Arthur F. Danz who resigned to become vice-president and general manager of Kirkman & Son.

William J. Gallon of J. P. Stevens & Co., **George P. Ray** of Riverside & Dan River Cotton Mills, **Donald B. Tansill** of Pepperell Mfg. Co., and **Joseph W. Valentine** of J. W. Valentine Co. have been elected to serve for three years as directors of Association of Cotton Textile Merchants of New York.

Textile Calendar

- National Assn. of Wool Manufacturers, annual meeting, Hotel Commodore, New York, Feb. 17, 1937.
- Committee D-13, A.S.T.M., meeting, Providence, R. I., Mar. 10 to 12, 1937.
- Twelfth Southern Textile Exposition, Textile Hall, Greenville, S. C., April 5 to 10, 1937.
- Southern Textile Association, meeting during show week in Greenville, S. C., April 9, 1937.
- Knitting Arts Exhibition, Commercial Museum, Philadelphia, April 19 to 23, 1937.
- American Cotton Manufacturers Association, anual convention, Mayflower Hotel, Washington, D. C., May 12-14, 1937.
- Cotton Manufacturers Association of Georgia, annual meeting, Cloister Hotel, Sea Island, Ga., June 3 and 4, 1937.

Frank Mossberg

Frank Mossberg has resigned as president and general manager of Mossberg Pressed Steel Corp., Attleboro, Mass. Mr. Mossberg, who is in his 79th year, expressed a desire to be relieved of the cares and responsibilities of his office, but he will remain as a director. During his business career he conceived numerous mechanical improvements. **Robert V. Olson,** formerly vice-president and sales manager, has been moved up to take Mr. Mossberg's place, **Lawrence M. Swift** becomes vice-president, **Albert E. Sparks** has been elected secretary and treasurer, and **W. S. Swanson** is sales manager.

Walter B. French has been appointed manager of the Lowell, Mass., plant of Appleton Co., succeeding the late Charles D. A. Grasse, Sr.

W. L. Hodges has been made superintendent of Roanoke Mills Co., Roanoke Rapids, N. C.

Norman G. Glattfelter has been appointed superintendent of the H. Warshow & Son, Avoca, Pa.

George F. Fisher, associated for over twenty years with John Dunlop's Sons, Inc., New York, as sales manager and as assistant to the late George M. Dunlop, has announced his withdrawal from that organization to form George F. Fisher, Inc. The new company, which has opened offices at 95 Madison Ave., N. Y., is dealing in thrown silk yarns for the weaving and knitting trades.

W. C. Neal has become purchasing agent for Rosemary Mills and Roanoke Mills, Roanoke Rapids, N. C.

J. B. Goldberg, until recently director of the research and development department at S. Slater & Sons, Inc., Webster, Mass., is now associated with J. P. Stevens & Co., New York, where he is in charge of a newly established laboratory.

Leonard C. Cartwright has recently joined the staff of Foster D. Snell, Inc., Brooklyn, N. Y.

H. N. Patterson, of High Point, N. C., who for some time has been sales manager of the New York office of Commonwealth Hosiery Mfg. Co., Randleman, N. C., recently resigned to become associated with the New York office of McCrary Hosiery Mills, Asheboro, N. C. He has been succeeded by **W. D. Freeze,** also of High Point, who has been associated with his father **E. W. Freeze, Sr.,** in the operation of the Commonwealth plant at Randleman.

A. H. Lawe, formerly superintendent of the Biddeford, Me., division of Saco-Lowell Shops has been promoted to the position of superintendent of methods covering both Biddeford and Saco divisions. **J. G. Crossley,** in addition to his present duties, will take over Mr. Lawe's former duties and will occupy the position of shop superintendent covering both Saco and Biddeford divisions. **Harold Lee** has been appointed general foreman of the Biddeford division, and **Arthur Loranger** has been appointed general foreman of the Saco division. **V. Beecroft,** formerly in charge of the standards department, has been appointed assistant to the works manager. **James Bain** will succeed him as head of the standards department.

E. V. Wilson, formerly assistant superintendent of Pelzer (S.C.) Mfg. Co., has been appointed Southern representative for Watson-Williams Mfg. Co. Leicester, Mass. His territory comprises the lower part of South Carolina and Georgia and Alabama.

Max Steiner, of Stunzi Sons Silk Co., New York, has been appointed to conduct the evening course in "The Manufacturing and Converting of Silk Goods," which is given by the University Extension at Columbia University.

Obituary

W. D. Anderson, Jr., aged 36, president of Bibb Mfg. Co., Macon, Ga., died Jan. 28. Mr. Anderson was the only son of W. D. Anderson, president of the company for 38 years until his elevation to chairman of the board a year ago. After his graduation from the University of Georgia in 1921, Mr. Anderson attended Philadelphia Textile School and then went to work in New Bedford, Mass., for several years. With this background of mill experience, he took a position as salesman for Bibb Mfg. Co. and progressed to sales manager and then vice-president in charge of sales.

D. Harvey Hill, Jr., associate editor of the *Textile Bulletin* and the *Southern Knitter,* Charlotte, N. C., died Jan. 20 in that city from complications following an operation for appendicitis. Mr. Hill, who was 47 years old, completed 25 years association with the Clark Publishing Co. last June. He was also secretary of the Southern Textile Association. He was born at Raleigh, N. C., in 1890, the son of the late Dr. D. H. Hill, former president of North Carolina State College. He devoted all his business life to the above mentioned publications. He was widely known and liked throughout the textile industry.

Prominent members of the industry served as both active and honorary pall bearers at his funeral. He is survived by his widow and two children.

Lawrence S. Holt, Sr., aged 84, one of the pioneers of the southern textile industry, died Jan. 15 at Statesville, N. C. He began his career in the cotton-textile industry in 1873 when he was given a one-fifth interest in the Alamance and Carolina Cotton Mills. With his brothers, he built the E. M. Holt Plaid Mills in Burlington in 1883. Mr. Holt retired from active duty several years ago.

William Iselin, aged 89, retired head of William Iselin & Co., New York, died at his home in New York on Jan. 26. Mr. Iselin was an ardent yachtsman, holding the No. 1 membership in the New York yacht club, which he joined in 1872.

R. W. Baldwin, aged 68, president of Marion (N.C.) Mfg. Co., died at his Marion home on Jan. 2. Mr. Baldwin went to Marion in 1921 when he was elected president of the mill.

Garrett A. Maxwell, aged 72, treasurer of Quality Hosiery Mills, Murfreesboro, Tenn., died on Jan. 8.

William J. Tonjes, treasurer and plant manager of Narragansett Finishing Co., Westerly, R. I., died in a New York hospital on Jan. 13.

Daniel B. Coltrane, aged 94, organizer and president of Norwood (N.C.) Mfg. Co., Kerr Bleaching & Finishing Works, Concord, N. C., and Linn Mills Co., Landis, N. C., died at his home in Concord on Jan. 16. Mr. Coltrane fought throughout the Civil War and was wounded three times. After the war he went west to Missouri, but later returned to North Carolina and organized the Concord National Bank in 1888.

W. D. Anderson, Jr.

D. Harvey Hill, Jr.

Almon G. Harris, aged 69, president of Harris, Emery Co., Penacook, N. H., and Agawam (Mass.) Co., died at his home in Penacook on Jan. 19. Mr. Harris was a member of one of the oldest families in the country engaged in wool manufacture.

Dr. Max Imhoff, aged 55, president of Imhoff-Paillard Piece Dye Works, Paterson, N. J., died on Jan. 20. Dr. Imhoff, a native of Switzerland, invented a process of weighting silk with lead.

Jacob Knup, aged 70, president of Hellwig Silk Dyeing Co., Philadelphia, Pa., died there on Jan. 8. Mr. Knup came to this country from Switzerland in 1887.

Edward Conyngham Peters, aged 81, president of Exposition Cotton Mills, Atlanta, Ga., died at his home in Atlanta on Feb. 1. He was the last surviving stockholder of the original group which built the mill as an outcome of the cotton exposition held in Atlanta in 1880. Among his various outside interests, Mr. Peters once operated the first horse-car line in town.

Sigmund Seiferheld, aged 62, president, N. Erlanger, Blumgart & Co., and pioneer in rayon lining developments, died Feb. 5, in New York.

Stewart Hartshorn, aged 97, who until recently owned the controlling interest in Joanna Cotton Mills, Goldville, S. C., died at his home in Shorthills, N. J. on Jan. 16. He had retired.

Andrew M. Young, aged 68, agent of Queen City Cotton Co., Burlington, Vt., for the last eighteen years, died Jan. 21.

Theodore S. Dutcher, aged 63, vice-president of Chalmers Knitting Co., Amsterdam, N. Y., died on Jan. 18.

John Webster Knowles, aged 77 who died Jan. 9 in Providence, R. I., was formerly assistant treasurer to his uncle, the late Joseph F. Knowles, at Acushnet Mills. Later he was made superintendent of the plant, but left to become treasurer of Page Mfg. Co., of which he was the organizer. In 1917 he took charge of New Bedford & Agawam Finishing Co., at Wareham, retiring from active business in 1927.

Textile World Analyst

TEXTILE WORLD's index of textile mill activity shows that the rate for the calendar year 1936 was 18% above that for 1935; and 22% above a "normal" year (1924-31 average) . . . Profit possibilities in carded cotton yarns and fabrics held steady in January at the improved levels reached in December. The noteworthy steadiness in these manufacturing margins is shown in Tables I and II (at right). . . . **TEXTILE WORLD's price index numbers** (below) reflect a slow upward trend, including the wool indices, which inclined to level off after climbing faster than the other groups.

Textile World's Price Index Numbers

STARTING with January, 1936, TEXTILE WORLD has revised its price index numbers to a 1923-25 base, to correspond with current statistical practices. Those who wish to continue with indices based on July 1, 1914, for chart purposes or otherwise, can secure conversion factors to change the new figures to the old by writing TEXTILE WORLD, Statistical Dept., 1427 Statler Bldg., Boston, Mass. Figures on cotton manufacturers, Aug. 1, 1933 to Jan. 6, 1936 include processing tax.

	Cotton Index Numbers				Wool Index Numbers				Silk Index	Rayon
Date	Cotton	Yarns	Gray	Colored	Wool	Tops	Yarns	Cloth	Raw-Silk	Index
1923-25	100	100	100	100	100	100	100	100	100	100
1930 ave.	50	61	61	72	58	61	72	90	109	46
1931 ave.	32	68	46	59	46	49	59	71	32	32
1932 ave.	24	37	37	60	36	40	52	57	21	28
1933 ave.	39	56	55	50	53	59	62	80	21	26
1934 ave.	61	67	70	62	63	70	75	91	17	25
1935 ave.	60	68	67	69	56	58	70	88	22	24
July 1935	61	68	65	69	56	59	70	89	20	23
Aug. 1935	58	68	66	69	56	59	70	89	23	24
Sept. 1935	55	66	68	69	58	60	70	89	25	24
Oct. 1935	57	68	68	69	60	61	73	92	27	24
Nov. 1935	60	70	69	72	62	65	75	92	27	24
Dec. 1935	60	71	69	72	64	66	76	92	26	24
Jan. 1936	48	67	63	68	67	73	75	93	26	24
Feb. 1936	42	62	58	67	72	81	77	93	24	24
Mar. 1936	42	61	57	66	73	81	77	93	23	24
Apr. 1936	43	60	55	64	68	75	76	90	22	24
May 1936	43	57	54	64	67	75	76	90	21	24
June 1936	44	58	57	65	67	75	76	90	20	25
July 1936	48	61	61	70	69	75	75	90	22	26
Aug. 1936	45	62	63	70	70	75	74	90	23	26
Sept. 1936	45	62	63	70	70	75	74	90	22	26
Oct. 1936	45	64	67	71	71	75	74	92	23	26
Nov. 1936	45	65	74	72	78	82	76	100	26	26
Dec. 1936	48	72	80	74	87	90	84	105	26	26
Jan. 1937	48	73	81	76	90	93	88	108	27	26

Fabric and yarn manufacturing margins follow:

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933..	21.4	October, 1935..	17.7
October, 1933.	19.1	November, 1935.	16.4
January, 1934	18.4	December, 1935.	16.2
April, 1934...	17.6	January, 1936..	17.2
July, 1934....	15.5	February, 1936.	16.5
August, 1934..	16.6	March, 1936...	15.5
September, 1934	18.6	April, 1936....	14.3
October, 1934..	17.4	May, 1936.....	14.3
November, 1934.	15.8	June, 1936.....	15.3
December, 1934.	16.2	July, 1936.....	16.9
January, 1935..	16.2	August, 1936..	18.0
February, 1935.	16.0	September, 1936	18.4
March, 1935...	15.9	October, 1936..	21.2
April, 1935....	16.1	November, 1936	25.4
May, 1935.....	16.0	December, 1936.	28.1
June, 1935.....	16.5	January, 1937..	28.6
July, 1935....	15.2	Jan. 6 ..	28.3
August, 1935...	17.1	Jan. 13 ..	28.6
September, 1935	17.9	Jan. 20 ..	28.8
		Jan. 27 ..	28.7

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933...	23.5	October, 1935..	15.8
October, 1933..	20.0	November, 1935	16.3
January, 1934..	18.3	December, 1935.	16.3
April, 1934....	15.9	January, 1936..	18.4
July, 1934.....	14.7	February, 1936.	17.5
August, 1934...	15.3	March, 1936...	16.3
September, 1934	15.6	April, 1936....	15.6
October, 1934..	14.6	May, 1936.....	14.8
November, 1934.	13.5	June, 1936.....	14.6
December, 1934.	13.5	July, 1936.....	15.0
January, 1935..	13.5	August, 1936..	16.5
February, 1935.	13.9	September, 1936	16.5
March, 1935...	14.4	October, 1936..	17.2
April, 1935....	14.1	November, 1936	18.0
May, 1935.....	13.8	December, 1936.	20.6
June, 1935.....	14.5	January, 1937..	20.8
July, 1935.....	14.3	Jan. 6 ..	20.9
August, 1935..	15.3	Jan. 13 ..	20.8
September, 1935	15.4	Jan. 20 ..	20.9
		Jan. 27 ..	20.6

TEXTILE WORLD'S

Cotton Digest

THE Southern Textile Exposition, held every other year at Greenville, S. C., is always an outstanding event in the industry. This year's show (April 5 to 10), far from being an exception to this rule, promises to be the most interesting one ever held in Textile Hall. Certainly, the condition of the industry supplies a propitious background . . . TEXTILE WORLD will devote a special section in its March issue to pre-exposition features including (1) a guide to the exhibits; (2) practical mill articles of interest to operating men in the industry; and (3) a study of the textile development in the South. We urge textile manufacturers to start *now* to make their plans to hook up with this exposition, so that they and their operating executives may get the most out of this remarkable educational opportunity.—*Editor.*

Carded Yarn Group Extends Activities—Plans for extending activities of the recently reorganized Carded Yarn Group of the Cotton-Textile Institute to include cooperation with those mills manufacturing colored yarns were made at a recent meeting of the executive committee. R. Hill Freeman, of Newnan, Ga., chairman of the colored yarn group, was elected a member of the executive committee, according to Owen Fitzsimons, secretary.

•

Japan Imports Doubled—Imports of cotton cloth from Japan during the first eleven months of 1936 were nearly 100% greater than during the corresponding period of 1935, according to the Department of Commerce. Through U. S. ports came 66,218,000 sq.yd. valued at $2,983,000. Total imports from all countries during this period were 99,054,000 sq.yd. valued at $9,294,000.

•

Student Style Show—North Carolina State College will hold its annual students' style show and textile exposition April 22. M. B. Payne, of Kannapolis, N. C., son of M. M. Payne, assistant superintendent of weaving, Cannon Mills Co., has been elected superintendent of the exposition, one of the highest honors which can be conferred on a textile student.

•

Packaged Wash Cloths and Towels—Cannon Mills, Inc., always an aggressive merchandiser, announces that sets of six wash cloths of assorted colors are now being put up in attractive packages to retail from 59c to $1. The cloths are known as Washies, and are expected to go big all year as inexpensive gifts and bridge prizes. Cannon Royal towels are also going to be promoted in units of three or six to the box, the idea being to give the customer something new in the way of a package, and, incidentally encourage larger unit sales.

•

Textile Securities Continue Advance—Common stocks of 45 cotton mills located in the Carolinas and Georgia increased an average of 19% in value from Sept. 1, 1936 to the middle of January, 1937, according to brokers' reports. A number of the stocks gained from $30 to $50 a share during this period.

•

Fabrics Body Approves Contract Clause—The Textile Fabrics Association recently announced that the majority of its members has approved use of a clause on sales contracts and orders for future deliveries of goods made of cotton or part cotton. This clause asserts that any portion of the order on which title has not passed is subject to adjustment if costs are changed as a result of legislation.

•

First Half 1936 More Profitable—The latest report of the Federal Trade Commission covering the first half of 1936 showed that all groups, with the exception of the stock dyeing and finishing companies, earned substantially greater profits than during the previous six months. Average rate of return on textile investment as shown, follows:

Companies	First Half 1936	Second Half 1935+
113 Spinning	2.77%	1.15%
67 Weaving	1.76%	0.32%
264 Spinning and Weaving	2.55%	0.63%
10 Stock dyeing and finishing	0.15%*	0.63%
77 Commission dyeing and finishing	3.75%	0.12%*
18 Thread manufacturing	8.94%	2.91%

* Loss.

+ 109, spinning, 64 weaving, 295 spinning and weaving, 8 stock dyeing and finishing, 87 commission dyeing and finishing, 18 (not identical) thread manufacturing.

•

Southern Mercerizing Co., Tryon, N. C., has appointed Turner, Halsey & Co., which has recently organized a yarn department to represent it in New York, New Jersey and New England. George C. Buscher, formerly in charge of sales for Amoskeag Mfg. Co., is the head of this yarn department. China Grove Cotton Mills also sell through this department.

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A.C.M.A. Convention To Be in Washington—The 42d annual convention of the American Cotton Manufacturers Association will be held May 12 to 14 in the Mayflower Hotel, Washington, D. C.

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Markets Continue Strong—The gray goods market opened strong in January with heavy buyings. Spot goods were available only in famine proportions. Denims were reported sold out completely for the first six months of the year. Unofficial estimates made about the middle of January showed unfilled orders for print cloth amounting to 465,000,000 yd., about 13½ weeks production, and orders for fine yarn goods amounting to 325,000,000 yd., or 13 weeks production. The flood situation had not greatly affected the markets for goods at this writing, although there had been some requests to hold up shipment. New business in cotton yarns was smaller during January, but deliveries continued in great quantities. Prices were maintained, and trade took an upturn at end of month. Carded-yarns are expected to be more stable in the future as a result of the reorganized Carded Yarn Group of the Cotton-Textile Institute.

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Statistics of particular interest to cotton manufacturers showing December operations and the raw material situation:

	Dec.	Nov.
Spindle activity (% capacity)	134.5%	129.9%
Spindle activity in million-spindle hours	8.679	7.997
Cotton consumed (bales)	692,921	626,695
Cotton exported (bales)	593,860	689,815
Cotton imported (bales)	15,909	8,945
Cotton ginned to Jan. 16 (thousand bales)	11,956	.....

Key cotton prices of Feb. 1 with comparisons follow:

	Feb. 1 1937	Jan. 4 1937	Jan. 25 1936	Feb. 1 1935
Spot Cotton N. Y.	13.29	12.91	11.95	12.55
Ditto, high previous month	18.33	13.11	12.90	12.90
Ditto, low previous month	12.91	11.56	12.55	12.65
10s hosiery cones	29c	29c	26c	28c
10s/2 carded skeins	29½	29½	25½c	27½
20s/2 carded peeler wraps	34½	34½	28½c	30½
60s/2 combed peeler wraps	64	62	55c	57
60s/2 mercerized cones	77½	75	68c	70
37 in., 3-yd. drill	10½	9½	8½c	9½
38½-in. 64x60s	8½	7 7/8	5 7/8c	6½
36-in., 4-yd. 56x60s	8½	8½	7½	7½
Denim, 2.20s	15½	15	14	15

Cotton

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TEXTILE WORLD'S

Wool Digest

THE competition which American-made all-wool blankets and steamer rugs are facing from imports of foreign goods is effectively high-lighted in the brief submitted to the U. S. Tariff Commission by the National Association of Wool Manufacturers . . . In this case, there is relief from the almost monotonous portrayal of Japan as the chief threat to our textiles; England is given the villain's role in the blanket drama. The items most commonly imported are all-wool single blankets priced to sell at retail from $5 to $12.50, with emphasis on the lower brackets . . . The facts presented by the association warrant investigation, followed by action.—*Editor.*

Seeks Higher Blanket Tariff—The National Association of Wool Manufacturers has made application to the U. S. Tariff Commission for an investigation of domestic and foreign costs of production on all-wool blankets and steamer rugs alleging that present tariff on these items is less than necessary to equalize production costs between U. S. and chief competing nations. The principal competing country is specified as Great Britain, and the chief lines as single, all-wool items, 4 lb. and heavier, retailing from $5 to $12.50. The association states that in January buyers were already asking prices on domestic blankets for fall, 1937, before going abroad to look at foreign lines. The tariff commission had the report by mid-January and early in February set dates for hearings on matter.

•

Seeks Favor for Domestic Goods—The N.A.W.M. issued a brochure last month aimed to discourage among dealers in wool fabrics and garments the ascendency inferred to foreign-made materials. The mailing of 12,000 copies covered 3,000 retailers in addition to manufacturers and wholesalers. "Manufacturers, retailers and consumers, alike show an enlightened self-interest when they give preference to the products of our domestic industry," says the association.

•

Women's Wear Brisk—Women's wear trade gains in activity with several mills selling men's wear worsteds to the women's wear trade for use in tailored spring suits. Certain dress goods mills have virtually withdrawn from the market, having accepted all of the business they can handle before Easter. Woolen coatings of the fleecy sports types are sales leaders. The rise in wool fabrics has led to increased sales of numbers in which cotton and spun rayon are used.

•

Wool Council Suggested—Formation of a Wool Council to consider and act on suggested improvements in methods of handling wool was suggested before the annual meeting of the Montana Wool Growers Association last month by Herbert K. Webb, of Chas. J. Webb Sons Co., Philadelphia. The Council should consist of representatives of growers, dealers and manufacturers who might simplify and correct present practices and so forestall possible regulatory legislation.

•

Mohair at New Highs—Mohair has risen to price levels which may endanger the continued use of the material in some fields say some observers. Adult Texas mohair has touched 70 to 75c in original bags. It will be remembered that the government paid around 35c for the clip several years ago and cleaned out its holdings at a final low of 6 to 8c.

•

American Woolen Co. in its annual report issued Feb. 4 reported net earnings for 1936 of $1,929,982, against net of $2,740,598 for 1935. Net sales at $71,022,578, were up 1% from 1935. New machinery to the extent of $3,536,860 was purchased and installed in 1936; 80% of the company's looms are automatic, against 67% at end of 1935. Current assets were $48,558,643, against current liabilities of $11,356,279.

•

Domestic wool prices continued their rise in January on small buying by mills, despite heavy arrivals of Australian wools at prices well below domestic values. A general levelling off is now noted here and overseas. Higher foreign markets are regarded as possible though not likely. Considerable contracting of Texas wools has taken place at high prices, mostly for mill account. As February opened, all domestic wools, tops, noils and wastes were somewhat hesitant at the peak of a rise over a four-month period.

•

Quarterly Wool Stock Report—The report of Bureau of the Census places total stocks of apparel wool on scoured basis in hands of dealers and manufacturers on Dec. 31, 1936, at 128,134,000 lb., a gain of 11,835,000 lb. over the same date a year previous. The gain is largely in foreign wool. From Sept. 26, 1936 there was a gain of only 1,288,000 lb., but a considerable shift in location of the wool with dealers stocks falling 11,500,000 lb. and manufacturers stocks rising 13,750,000 lb. Carpet wool stocks were 36,131,000 lb., scoured basis at end of 1936 against 35,947,000 a year previous and 33,116,000 three months previous. Tops and noils were about unchanged from a year ago, but tops were down about 15% since September, and noils up 11%.

•

Top Market Steady—From early January to near the month's close quotations on spot tops by the exchange stood at $1.31. There was a drop of 10c at mid-month which was quickly recovered. Futures fluctuated in a relatively narrow range. Spots closed the month at $1.25.

•

New Wool Partnership—John R. Ott, formerly of James G. Kitchen & Co., and Albert Zimmerman, formerly vice-president of Artloom Corp., have formed a partnership as Ott & Zimmerman to conduct business in foreign and domestic wool with headquarters in the Drexel Bldg., Fifth and Chestnut Sts., Philadelphia.

•

Key wool prices of Feb. 1, a month ago, and the last two years follow:

	Feb. 1 1937	Jan. 4 1937	Jan. 25 1936	Feb. 1 1935
Fine and fine med. territory	$1.08	$1.06	$0.82	$0.72
Ohio ⅜s	.54	.51	.41½	.28½
Tops fine 64–66s	1.38	1.35	1.12½	.91
average ⅜s	1.17	1.15	.99	.74
high ½	1.10	1.10	.91	.65
Noils, fine	.85	.83	.70	.52
½	.66	.65	.54	.40
2–40s 60s wstd yarn	1.90	1.85	1.50	1.36½
8020 serge	2.20	2.15	1.95	Not quoted

•

Current statistics on wool consumption and mill activity follow:

Wool consumed clean equiv.	*Dec.* (4 weeks)	*Nov.* (4 weeks)
Apparel wool, lbs.	27,948,000	24,020,000
Carpet wool, lbs.	11,556,000	9,968,000
Machinery activity (40 *hr. shift*)		
Looms (50″ and wider)	121.9%	103.3%
Carpet looms	83.7%	80.5%
Combs	157.4%	135.3%
Worsted spindles	118.9%	103.4%
Woolen spindles	143.3%	123.0%

Wool

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Rayon & Silk Digest

WITH a new record in both production and consumption for 1936, rayon continues to make "success" history. There is only one danger in the present situation. With consumption exceeding production, and with stocks low, there may be a tendency on the part of yarn producers to let up on merchandising effort in 1937. Such a temptation has come to this and other industries during sellers' markets in the past; it may seem rather silly to seek more orders when it is impossible to fill those on hand. It is a temptation which should always be resisted—particularly so in this case when one remembers the big increase in output which will come in 1938!—*Editor.*

Yarn Demand Continues Strong—Demand for all types of synthetic yarns held strong through January. Difficulty in filling customer needs remained a dominant feature.

•

Silk Tilts Upward—While the post-holiday period brought considerable fluctuation in raw silk, prices showed a firm basis and the latter part of January found quotations slightly above December. Crack double extra 13/15 white 78 per cent closed at $2.02 Dec. 31, rising to $2.05 to $2.08 Jan. 20.

•

New Lingerie Yarn—Rayon's gains in lingerie, a highlight of 1936, promise to increase this year. Rayon Division, E. I. du Pont de Nemours & Co. announces new fine filament Acele yarn; this yarn is exceptionally soft, and is believed to have excellent lingerie possibilities. So far, the new number is made only in 100 denier, 66 filaments.

•

1936 Silk-Rayon Start Poor—1936 was a lean year for silk-rayon textile industry, FTC report shows. For first half, net losses on textile investment ranged from 2/5 of 1 per cent to three per cent in four out of the total seven groups studied. The remaining three groups reported profits varying from ½ of 1 per cent to 1.7 per cent.

•

Mangan Heads Credit Body—T. J. Mangan, of E. Gerli & Co., Inc., was elected president of the Silk & Rayon Credit Association, at the body's annual meeting in New York last month. He succeeds Weber de Vore, of Cliftonia Print & Dye Works, Inc., Clifton, N. J. Other officers: T. A. Caulfield, of Viscose Co., vice-president; C. A. Brothman, of Skenandoa Rayon Corp., treasurer, and F. S. Dayton, executive vice-president and secretary.

•

Tubize to Double Acetate Output—Prospects for substantial rise in acetate yarn output during 1937-1938, were further heightened last month when Tubize Chatillon Corp., on authority of its directors began work on plans to double its acetate output. Completion of this expansion will give firm annual acetate capacity of 2,500,000 lb.

•

RSI's Big Year—Taking stock of its first complete year, Raw Silk Importers, Inc., reported a membership rise from the original 18 founders to 41, which includes leading firms in raw silk, throwing, weaving and finishing divisions. Significant progress toward solution of major problems was reported by H. Lee Moss, secretary.

•

Rayon Fabrics Continue Active—December, usually a lull month in rayon fabric deliveries, was above October though below November, according to joint figures of NRWA and NFT. December fabric movement was slightly above output, NRWA reports. Index figures follow:

1934=100	Oct. 1936	Nov. 1936	Dec. 1936
Taffetas, Twills, Linings and Other Staples	276	324	307
Dress Goods, Novelties, and other Fancies	112	130	110
Total	168	197	178

•

Federation Meets Feb. 16—Annual meeting, NFT, will be combined with a luncheon, Feb. 16, at the Republican Club, New York. The meeting will be open to all members for informal discussion of trade problems. Members will elect directors who later will elect officers of the Federation for 1937.

•

Rayon Weavers Meet—Legislative, production and merchandising problems are on the calendar for the annual meeting of the National Rayon Weavers Association which is being held Feb. 9 in New York. C. W. Dall, association president also announced completion of a talking slide-film feature, "Rayon Comes of Age" for stores.

•

Financial Flashes—RFC approves application by Cheney Bros., silk manufacturers, for $1,081,000 loan. . . . Duplan Silk Corp. nets $323,118 for half-year ended Nov. 30, 1936, against $264,375, same period, 1935. . . . Industrial Rayon Corp. announces new issue of 247,625 shares, no par value, capital stock; proceeds will finance part of Painesville, O., plant construction.

Fabric Market Strong—Spirited demand for silk-rayon fabrics through January tightened prices generally. Leading syndicate buyers warned customers that this month might bring a shortage. Synthetic fabrics were especially active; pigment taffeta prices rose steadily after the holidays and, as January ended, prices of that line neared last year's high.

•

Fiber Identification Asked — The highly complicated issue of fabric identification by fiber has been revived, this time by the N. Y. City Federation of Women's Clubs. That body is reported to sponsor early action on this matter by the Federal Trade Commission. Move has reopened question of specifying rayon content in silk mixtures, specifying metallic content of all-silks, etc.

•

Another Christening—G. H. Alberga, of Blackstone Plush Mills, Inc., Clinton, Mass., suggests **Luxspun** as a new name for spun rayon.

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Rayon Key Prices and Statistics follow:

	Feb. 1 1937	Jan. 4 1937	Jan. 25 1936	Feb. 1 1935
Viscose process				
75 denier (18-30 fils.)	$0.90	$0.90	$0.90	$0.92
100 denier (40 fils.)	.79	.79	.79	.80
150 denier (40 fils.)	.60	.60	.57	.60
Acetate process				
150 denier	.60	.60	.60	.68½
Cupra. process				
150 denier (112 fils.)	.65	.65	.65	.70
Rayon staple 1½, 3 and 5½ denier	.28	.28	.34	.34

Indices of Deliveries (*Rayon Organon*)*

Month	Jan.	Dec.	Nov.
For year 1937	539	...	...
For year 1936	477	562	508

* Exclusive of Acetate. Daily average 1923–25 = 100.

•

Silk Key Prices and Statistics follow:

Prices	Feb. 1 1937	Jan. 4 1937	Jan. 25 1936	Feb. 1 1935
Crack XX 13/15 white 78%	$1.98	$1.99½	$1.90	$1.42½
Tram, 5thd Japan 85%	2.88	2.85	2.62	2.27½
Tram Crack XX 78%	2.62	2.61	2.49	2.02½
60s-2, spun silk	3.05	3.05	2.97½	2.95

Statistics	Imports	Approx. Deliveries	Stocks at Warehouses
Jan. 1937	50,328	44,198	50,544
Dec. 1936	41,627	45,328	44,414
Nov. 1936	50,814	40,401	40,713

Rayon & Silk

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TEXTILE WORLD'S

Knit Goods Digest

GOOD news from Philadelphia! The 1937 Knitting Arts Exhibition, scheduled for April 19 to 23, promises to be a record-breaker. Despite the fact that some 30 booths have been added to the display quota, the total space is now very close to 100% sold. This is a reflection of the improved condition of the industry, as well as a warning to the would-be exhibitor who has not yet reserved his space.—*Editor.*

Hosiery Steadying to New Levels—Gradual adjustment to higher prices marked hosiery market last month. Buying was less hectic but continued active; distributors showed little resistance to the new levels.

•

Three-Ply Hosiery Conference This Month—Hosiery Industry Conference at Waldorf-Astoria Hotel, New York, this month has three main divisions as follows: Feb. 10, directors' meeting, NAHM, followed by dinner-meeting of officers of all five trade associations; Feb. 11-12, industry-wide conferences, with Dr. Willard L. Thorpe among speakers on topics covering (a) industrial legislation, (b) fair trade practices and industry survey.

•

25% Wage Raise in South Asked—Chattanooga, Tenn., meeting of Tristate Council of Hosiery Workers forms plans to demand 25% wage raise for hosiery workers in Tennessee, Georgia and Alabama.

•

Constantine's Rapid Transit—Earl Constantine, managing director, NAHM, concluded his multiple dinner-conference program in late January, having made six major trips to hosiery centers, totalling about 10,000 miles, within four weeks. The meetings aimed to crystallize industry opinion on legislative and other major issues.

•

Underwear Wage Hearing—Proposed minimum wage rates in the men's underwear industry under terms of the Walsh-Healey Public Contracts Act were discussed at a public hearing held Feb. 11 by the Public Contracts Board, Department of Labor, Washington, D. C. Representatives of management and labor conferred with the board on this subject Feb. 10.

•

Extend Time Limit on Tax Returns—NAHM Jan. 20 issued a broadside urging hosiery manufacturers to ask time extension on 1936 unemployment tax returns. Two days later the Internal Revenue Dept. extended the time to April 1.

•

Hosiery Sales Ring The Bell!—All records for hosiery sales were broken in 1936, with a total of 122,700,366 doz. pr., which was 10.3% above 1935. All major branches, except woolens, shared the gain, the NAHM reports.

•

Union Favors Market Agreements—Highlights of AFHW convention at Washington, included adoption of market agreement plan to take the place of national labor agreement. Action was interpreted also as vote of confidence in President Rieve.

•

See Import Quota Coming—Market reaction to Washington hearing on Japanese hosiery import issue was that controversy finally would be settled by adoption of mutually acceptable quota system.

•

Just a Guess—Hosiery leaders who returned to their desks after three weeks' attendance at the "ringless" trial, Philadelphia, opined there would be few fireworks at the coming Rosedale anti-trust trial. This thought was based on the belief the hearings would comprise mainly testimony already submitted.

•

Flood Worries Outerwear Buyers—The fact that the Ohio flood was in close proximity to important knitted outerwear centers caused some worry among buyers last month. While no direct damage of any size was reported, jobbers and retailers were apprehensive that shipments might be delayed.

•

Bathing-Suit Output—The steady increase of bathing-suit output in the United States since 1933 is indicated in data recently made public by the Bureau of the Census of the Department of Commerce. The 1935 output, the figures show, exceeds that of 1933 by 15.2% in volume and by 22.1% in value. While the volume for 1935 was slightly below that of 1931, the value was nearly $1,000,000 above the earlier year.

The following figures cover knitted suits only:

Census year	*Dozens*	*Value*
1935	960,000	$13,858,000
1933	833,000	11,349,000
1931	963,000	12,859,000
1929	1,021,000	22,084,000

•

Aberle Has Exclusive Colors—Ten shades, entitled "Chameleon Colors" have been developed by a secret process in the laboratory of H. C. Aberle Co., Philadelphia, and are being offered in the firm's spring-summer hosiery line.

•

Cheney's Word of Caution—Pointing out that underwear production in 1936 was well above the 1927-1935 yearly average and might not be exceeded in 1937, Roy A. Cheney, managing director, UI, urged manufacturers to be conservative in production plans for 1937. He expected 1936 sales to be equalled this year but warned against excessively optimistic output.

•

Advance Underwear Call Heavy—Underwear demand held strong through January and there was a notable rise in fall orders. Buyers covering for spring and summer foresee further price advances in March or April, and are placing business freely at current levels.

•

Underwear Wage Study Partially Complete—Hourly and piece-work rates in the knitting, bleaching and dyeing and drying operations in the underwear industry have been assembled by the UI as part of its general wage study. Correlated data on these operations is being supplied to the mills which contributed the original data. The data includes hourly and piece rates and regional variations for male and female operators.

•

NKOA Banquet March 2—Annual NKOA banquet, always a highlight knit goods social event will be held Tuesday, March 2, at the Astor Hotel, New York. Expected attendance: 800. Entertainment chairman: Sol Sussman.

•

What Price Fall Sweaters?—Several leading mail order houses and chain stores are understood to have placed substantial orders for fall sweaters—and trade is guessing as to prices. Some believe accepted prices were slightly above spring while others insist orders would not have been placed at other than current levels.

•

Polos a 1936 Highlight—Polo shirt business in 1936 both in volume and profit was well above 1935, KNOA reports, in citing polo sales as a highlight of 1936.

Knit Goods

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TEXTILE WORLD'S

Processing Digest

CARRYING the identity of the many new finishes to the consumer is an important job which must be done. Consequently, U. S. Finishing Co. is to be congratulated upon its merchandising aggressiveness in establishing a seal of identification for use on all fabrics having the "Vitalized" crease-resistant finish. Nevertheless, we feel that Tootal, Broadhurst & Lee missed a bet by not insisting that their licensees use a uniform, distinguishing name for this finish which, through continued repetition, would have made the consumer crease-resistant conscious just as the use of the term Sanforizing by all licensees of that process has made the consumer preshrunk conscious. Maybe it's not too late to start something along this line.—*Editor.*

Finishing Rayon—Two papers on finishing rayon fabrics were presented at a meeting of the New York Section, A.A.T.C.C., held Jan. 29 at the Swiss Chalet, Rochelle Park, N. J. Dr. H. H. Mosher, Onyx Oil & Chemical Co., discussed the chemical aspects in finishing rayon crepe. Dr. J. E. Meili, Sandoz, Chemical Works, spoke on the saponification of acetates.

•

Sales Note—Members of the Textile Fabrics Association are planning to use a standard sales note to their finished-goods customers. The note is expected to be similar to the one now in use between buyers and sellers of gray goods, but will probably contain a provision under which the buyer agrees neither to copy the designs of fabrics purchased from the seller nor to have the designs copied by parties outside the transaction.

•

Chemists Elect—Cyril S. Kimball has been elected honorary chairman of the American Section, Society of Chemical Industry, succeeding Dr. Foster Dee Snell, who resigned from that post recently.

•

Textile Approval Shield—Cluett, Peabody & Co. will feature the Textile Approval Shield of the American Institute of Laundering in its Arrow shirt packaging. The approval shield certifies to preshrinkage, color fastness, tensile strength, and other properties.

•

Coming Event—Permanent sizing of fabrics with alkali-soluble cellulose ethers will be described by Dr. Wallace P. Cohoe, vice-president Sylvanic Co., Inc., at a meeting of the American Section, Society of Chemical Industry, to be held Friday evening, Feb. 19, at the Chemists' Club, New York.

•

Formaldehyde—James A. Branegan, president Kali Mfg. Co., in a talk delivered Jan. 13, at New Bedford Textile School, outlined the manufacture of formaldehyde and described its textile uses. One of the most recent developments discussed is in the preparation of urea-formaldehyde resins employed in crease-resistant finishes.

•

Profits—An average return of 3.75 per cent on their textile investment was reported to the Federal Trade Commission by 77 commission dyers and finishers of cotton goods for the first six months of 1936, as contrasted with a loss of 0.12 per cent for 87 companies reporting for the last half of 1935. Due to the revoking of the surcharge which was put into effect the first of the year and, in some cases, refunding of the amounts already collected, it seems probable that reports for the second half of 1936 will be less favorable.

•

Price Increases—Anticipated prices increases averaging 1c a yard for dyeing viscose and acetate became a reality late last month when uptown New York converters were notified of the advances.

•

Wonder World of Chemistry—The correct title of the sound picture presented under the auspices of E. I. du Pont de Nemours & Co., Wilmington, Del., at the November meeting of the Southeastern Section, A.A.T.C.C. is "Wonderworld of Chemistry." Due to an error in the release from the section, this was referred to in our December issue as the "Underworld of Chemistry."

•

Neva-Wet in Europe—Samuel Lefkowitz, president, Neva-Wet Corp. of America, reported upon his recent return from Europe that offices of the company have been opened in Manchester, England, and in London, and licenses to use the Neva-Wet process have been granted in Poland.

•

Short Sit-Down—What is said to be the first sit-down strike in the textile industry started Jan. 6 at the plant of B. & B. Hosiery Dyeing & Finishing Co., Philadelphia. Company officers and union officials reached an agreement the following day, and the strike ended.

•

Pacific Print Active—Reports from Lawrence state that Pacific Mills print works division is exceptionally busy, 53 printing machines now being operated.

•

New Licensee for Aqua Sec.—Donald Martin, president, Aqua-Sec. Corp., announces that National Dyeing & Printing Co., has been licensed to use his company's product for rendering fabrics water repellent. Earlier licensees are Sunbury Converting Works and United Piece Dye Works.

Clarity and vivid coloring characterize newest application of discharge printing to popular-priced acetate fabrics. Courtesy Rayon Division, E. I. du Pont de Nemours & Co.

Processing

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TEXTILE WORLD'S

Engineering Digest

J. L. TRUSLOW, of Whitin Machine Works, expressed the belief recently that we are now "temporarily finished" with the period of design developments in textile machinery, and that no radical improvements should be expected for the next several years. Others share that opinion, in the conviction that a "digestive" period usually follows one of intense activity such as we have had during the last decade. Manufacturers and their engineers will welcome this interval, if it materializes, as it gives them a chance to "take stock," as it were. But let them not be lulled into any sense of false security! There are mechanical developments in the making which require that every one engaged in this industry keep informed and alert.—*Editor.*

Supply and Accessory Markets Advance—A survey of purchasing agents and master mechanics recently made by TEXTILE WORLD showed that practically all supplies and machinery accessories have increased considerably in price during the last year. The most outstanding advance was in the price of window glass which is up 25 to 30 per cent due primarily to strikes affecting the glass industry. Cold-rolled steel shafting, screw stock, etc., is up about 10 per cent over last year, but the advance has been gradual. Other heavy metals and metal parts are up in proportion. Leather is up about 15 per cent over last year, but the price is still low due to extreme competition among leather companies. Skins for roll covering and other purposes are up 10 to 20 per cent. Paint prices are slightly higher than last year, but the pending Robinson-Patman bill is holding up any real activity in this field. Electric wiring, copper and brass equipment have advanced greatly during the year, probably due in part to the European war situation. Shuttles and other loom accessories, generally speaking, remained on an even keel throughout most of the year. Paper prices are up 5 to 7½ per cent. Burlap however is cheaper.

•

Seventeenth Fuel Engineers' Meeting—More than 100 fuel engineers were present at the seventeenth Fuel Engineer's Meeting held last month at Cincinnati. Principal speakers were Dr. Reinhardt Thiessen, research chemist, Pittsburgh Experiment Station, U. S. Bureau of Mines; J. J. Brennan, research engineer, Northern States Power Co.; R. M. Hardgrove, engineer, Babcox & Wilcox Co.; E. P. Ogden, consulting ceramic engineer, Columbus, Ohio; and E. L. Greever, attorney, Tazewell, Va., Appalachian Coals, Inc., was host to the group.

•

Machinery Exports Up—Sales abroad of American machinery during the first nine months of 1936 amounted to $245,906,000 or 27 per cent more than during 1935, according to **American Machinist.** Heaviest increases were in power-driven metal-working machinery, which evidently means that foreign countries are becoming more interested in constructing their own machinery.

•

Atlantan Honored—Comander L. F. Bellinger, U. S. N. (retired), Atlanta, Ga., was elected a national vice-president of the American Society of Civil Engineers at its 84th annual meeting held last month in New York. He is well known in southern engineering circles.

•

Western North Carolina Safety Council—An interplant safety contest for 1937 is being sponsored by the Western North Carolina Safety Council. The contest will cover two divisions of plants, those employing more and those employing less than 100 persons.

•

Cost of Industrial Accidents—"The cost of industrial accidents— in money, in human suffering, in lost time, in interruption of business activities, in uncompensated overhead, and in labor turnover—is needless waste," recently declared Edward C. Jacobs, assistant district engineering manager of American Mutual Liability Insurance Co., speaking before the plant representatives section of the Baltimore, Md., Safety Council. He urged correction of conditions which cause injuries rather than improvement of them after the accident has occurred.

•

Textile engineers, attending a regional meeting of the Textile Section of the American Society of Mechanical Engineers at the Engineers Club, Boston, Jan. 28, heard a paper on developments in cotton-spinning machinery by James L. Truslow, of Whitin Machine Works, and one on textile microscopy by Prof. Edward R. Schwarz, of Massachusetts Institute of Technology. **A. W. Benoit,** of Chas. T. Main, Inc., presided.

•

New York Safety Council Meets—The eighth annual convention of the Greater New York Safety Council will be held April 13, 14 and 15 at the Astor Hotel in New York.

Engineering

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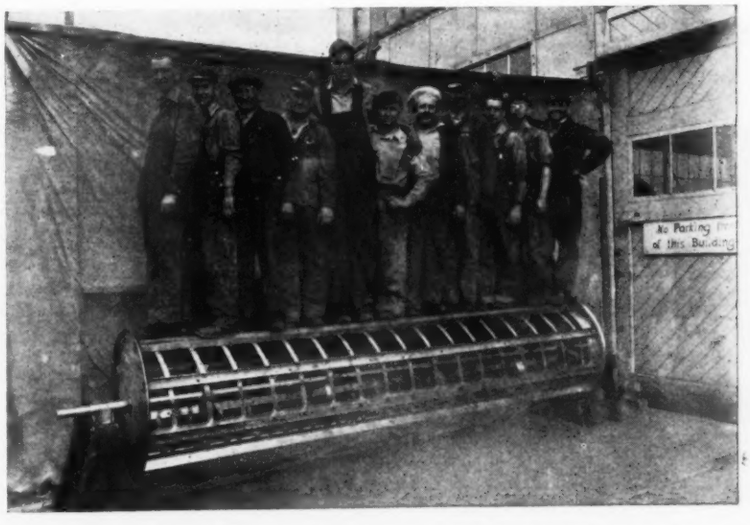

The strength of stainless steel is demonstrated by this photograph of a reel 12 ft. in length, recently installed in a New Hampshire mill by Rodney Hunt Machine Co. The new and patented method of supporting the thin struts guarantees a strength far greater than has been called upon to support these men—nearly a ton of human flesh. This company reports a surprising increase in the demand for stainless steel in both new and replacement finishing machines.

Mill News

Cotton Mill News

Pepperell Mfg. Co., Opelika, Ala., has awarded contract to Batson-Cook Co., West Point, Ga., to build a second story on the mill designed to house additional spindles and 500 looms which are being moved from the Biddeford, Me., mill.

Bridgeport (Conn.) **Coach Lace Co.** has acquired a tract of about 3 acres of land at Holland Ave. and Ash St., improved with a one-story industrial building, and will occupy for expansion.

La Fayette (Ga.) **Cotton Mills** have been engaged in adding around $70,000 in modern machinery.

Bibb Mfg. Co., Macon, Ga., has plans nearing completion for three-story addition to local mill, 50 x 200 ft., to cost over $100,000, with equipment. Plans are also under way for a three-story extension to branch mill at Columbus, Ga., 75 x 200 ft., as well as for a three-story addition to mill at Porterdale, Ga., 50 x 200 ft., each to cost approximately the same amount as noted. Q. R. Nolen, 221 Buford Pl., Macon, is engineer for all three units.

Moultrie (Ga.) **Cotton Mills**, are having their machinery overhauled by Dixie Spindle & Flyer Co., Inc., Charlotte, N. C.

West Point (Ga.) is converting its Riverview, Ala., cotton mill into a towel factory at an estimated cost of $150,000.

Androscoggin Mills, Lewiston, Me., which stopped the manufacture of sheetings as unprofitable and substituted rayon, several years ago, is installing wide sheeting looms in idle space in the Bates Mills, Lewiston, to resume sheeting production.

Chicopee Mfg. Corp., Chicopee Falls, Mass., is enlarging its finishing department by adding a new unit consisting of kiers, tenter frames and dyeing equipment. This company's program of modernization, begun early in 1935 with installation or rebuilding of 50,000 spindles, is being continued this winter with improvement and replacement of carding, spooling and warping equipment.

Maverick Mills, East Boston, Mass., have work under way on two-story mill addition, 60 x 175 ft., for which general contract recently was let to the E. C. Blanchard Co., 940 Broad St., Lynn, Mass. It will cost over $80,000, including equipment.

Ragan Spinning Co., Gastonia, N. C., will build a $150,000 addition to its plant on the Gastonia-Bessemer City road. The building will be 135 x 200 ft., one-story, with monitor cast-iron columns, steel girders and steel sash. The machinery has already been purchased and the plant is expected to be ready for operation about June. H. V. Biberstein, Charlotte, N. C., is architect.

Shuford Mills Co., Hickory, N. C., is installing 24 new spinning frames to replace the older type frame, which have been used in the mills.

American Yarn & Processing Co., Mount Holly, N. C., began work on an 80 ft. extension to its Woodlawn plant Jan. 20, which when completed will raise the capacity by 50%. New equipment will include 4,000 spindles, 6 combs and 16 cards.

Rocky Mount (N. C.) **Mills** have let a contract for an addition to present mill. This addition, which will measure 40,000 sq. ft. of floor space, will house 8,000 more spindles, and complementary machinery, and will give employment to 100 more people.

Sellers Mfg. Co., Saxapahaw, N. C., will begin an expansion program early this year, which will increase production one-third. A new modern mill building will be erected, measuring 100 x 200 ft., which will house spinning and carding divisions. The expansion program will cost more than $100,000.

Marshall Field & Co., Manufacturing Division, Spray, N. C., has awarded Southeastern Construction Co. Charlotte, N. C., contract to construct three additions to plants at Draper and Spray, costing approximately $253,000. The Draper unit will be 156 x 310 ft. The two Spray units will consist of a four-story 140 x 140 ft., brick-and-reinforced concrete addition to an existing building, and a three-story, brick-and-steel, 63 x 100 ft. structure. The Draper building will be used for a sheeting department, while the two Spray units will be used by the finishing department.

Carolina Narrow Fabric Co., Winston-Salem, N. C., has practically doubled its capacity since moving from Waughtown into its new building on North Chestnut Street, early this year. Plans are under way for another expansion this year, when additional looms will be installed increasing production about 25%.

Santee Mills, Bamberg, S. C., has completed installation of two one-process pickers.

Clinton (S. C.) **Cotton Mills**, old Lydia mill building, are reconditioning the building and will install 200 looms in this unit.

Joanna Cotton Mills, Goldville, S. C., have announced plans for the enlargement of the mill and the addition of 450 looms, which will give a 25% production increase.

Panola Cotton Mill, Greenwood, S. C., has had the Textile Shop at Spartanburg, S. C., remodel their slasher hoods and install a new pipe system in their slasher division.

Laurens (S. C.) **Cotton Mills** has just installed a new Curtis & Marble float thread shear.

Pacolet (S. C.) **Mfg. Co.**, has been overhauling the equipment of the spinning and carding departments, using the Guillet overhauling system.

Kendall Co., which recently purchased **Pelzer** (S. C.) **Mfg. Co.**, has plans under way for extensive improvements to the Pelzer plant, which will include installing some new machinery. Lockwood-Greene Engineers, are handling the work.

Martel Mills Corp., Spartanburg, S. C., has work under way on reconditioning and improving its **French Broad Cotton Mill** in Elk Mountain district, idle nearly 6 years, including installation of machinery, and will resume operations in March or April for the production of sheetings, giving employment to 250. Machinery from a plant at Watertown, N. Y., is being installed.

Whitney (S. C.) **Mfg. Co.** is having spoolers and warpers equipped with the vacuum lint and dust collector system sold by Textile Shop, Spartanburg, S. C.

Werthan Bag Corp., Nashville, Tenn., has purchased a Guillet overhauling system.

Mexia (Tex.) **Textile Mills** are installing high-speed warpers and automatic winders to replace older equipment.

Texas Textile Mill, Waco, Texas, has installed high-speed spooling, warping and long-draft roving machinery.

Canadian Cottons, Ltd., Cornwall, Ont., have worked under way on one-story addition to local mill, known as the Canada Mill, for which general contract was awarded recently to Anglin Norcross, Ltd., 892 Sherbrooke St., West, Montreal, Que. It is estimated to cost over $50,000, with equipment.

Firestone Cotton Mills of Canada, a subsidiary of the Firestone Tire & Rubber Co., Akron, O., has been granted a charter to operate the former plant of the Oxford Knitting Co., Woodstock, Ont. The authorized share capital is $100,000, and the head office is to be in Hamilton.

Cotton Financial Notes

Russell Mfg. Co., Middletown, Conn., has sold two of its unused mills in the course of a rehabilitation program. The Rockfall mill has been sold to Paul S. Maier, acting as agent. The mill at the foot of Russell street has been sold to the Waldman Mfg. Co.

Berkshire Fine Spinning Associates have transferred their executive offices from Fall River to Providence, R. I. Berkshire has sold its plant in Pownal, Vt., closed for six years to a manufacturer of leather goods.

Grinnell Mfg. Corp., New Bedford, Mass.—Plans are under way for the early liquidation of this company, approved by stockholders at a recent special meeting. Company has been negotiating for an RFC loan of $250,000 and this financing will be abandoned.

J. W. Sanders Cotton Mills, Inc. has reopened its mill at Meridian, Miss.

Ellenboro (N. C.) **Mfg. Co.**, owned by Belk Bros. of Charlotte, N. C., since its establishment, has been sold to a corporation, which has a capital stock of $100,000, and the name has been changed to the "Queen Anne Mills Co." Incorporators are W. E. Mason, R. C. McCall and R. E. Thigpen.

American Cotton Mills, Inc., **American Combed Yarn Corp.**, and **Gastonia Thread Yarn Mills, Inc.**, all located in the vicinity of Gastonia, N. C, will be reorganized, according to a plan recently filed by the United States Government with the Federal District Court, Charlotte, N. C., subject to court order.

Granite Falls (N. C.) **Mfg. Co.**, is rearranging the machinery to balance the different departments of the plant. There are three mills of this company, and each will go through the same process.

Kinston (N. C.) **Cotton Mills** have been organized to take over the Caswell Cotton Mills. C. S. Smart, formerly of Concord, N. C., and L. M. Carpenter, formerly of Spartanburg, S. C., organized the new concern.

Catawba Cotton Mills, Newton, N. C., is being renovated in preparation of opening the mill for operation at an early date. It recently was bought by J. A. Moretz, of Hickory, N. C., who operates Carolina Mills, Inc., Maiden, N. C., and by Julius W. Abernethy, of Newton.

Grier Mills, Inc., North Wilkesboro, N. C., have been formed with capital of $100,000, to take over and succeed to the **Grier Cotton Mills, Inc.**, operating a local plant. S. V. Tomlinson and J. R. Hix, president and secretary-treasurer, respectively, of the latter company, head the new organization.

Ella Division of **Consolidated Textile Corp.**, Shelby, N. C., recently reopened with two 40-hr. shifts. It is engaged in the manufacture of print cloths.

Capel Rug Mill, Troy, N. C. has acquired the idle plant of the Wilbur Cotton Mills, Inc., about 4 miles from Troy, and will take over property at once, remodeling and equipping for new branch mill for yarn production for rug manufacture.

John Williams Mfg. Co., Philadelphia, Pa., real estate met no bids when offered at auction early in January.

Manville-Jenckes Corp., Pawtucket, R. I.—Local Plant A of this company has been sold by the Pawtucket City Council to the New England Paper Tube Co., Pawtucket.

Clover (S. C.) **Mills** closed for some time is under option for sale to J. C. Cloniger, general manager of Neely Cotton Mills, York, S. C. Machinery was lately sold.

Langley (S. C.) **Cotton Mills Co.**—The receivership for this company has been terminated and the receivers, W. E. Bush and P. F. Henderson, discharged by the Court.

Richmond Spinning Co., Chattanooga, Tenn., is now under new control and management, according to S. P. Haight, president. Other officers are Charles Bagley, vice-president; John Fowler, treasurer; Everest D. Haight, secretary; and R. E. Smith, general manager. Former stockholders have agreed to exchange their holdings for preferred stock.

Wool Mill News

Peerless Woolen Mills, Rossville, Ga., is completing its improvement program started early last summer. Machinery is being rearranged for a "stream-lined production unit," according to H. M. McCullock, secretary.

Packard Woolen Co., Ashland, N. H., has built a new dam, new water wheel and made other improvements to the mill property.

Elm Mills, Tilton, N. H., have bought new carding machinery which is being placed in a vacant building at Franklin. Manager Edward Goldstein said the company is planning to make more yarn to meet demands of its weaving department.

Newton Shirt Co., Homer, N. Y., has been reorganized as the **Newton Woolen Mills, Inc.** Wardwell W. Jones, vice-president of the Utica-Duxbak Corp., Utica, N. Y. is president

of the new concern, other officers of which are Charles Allen, Jr., vice-president; J. C. Newton, treasurer and general manager, and Cline Newton, secretary. The Newton organization spins and weaves its own fabrics for its flannel shirts.

Waterloo (N. Y.) Mills, Inc., shut down for more than three months, may reopen in the near future. New looms and automatic attachments for other looms have been lately installed. The plant was operated for several months last year on a large TERA order after idleness for more than two years.

Collins & Aikman Corp., Philadelphia, Pa., has work nearing completion on alterations and improvements in Plant B, Fifty-first St. and Columbia Ave., for which a building permit was recently taken out.

Penn State Worsted Mills, Philadelphia, Pa., recently organized, have leased property at Frankford, and will operate a new mill at that place. William F. Watkins, 1302 Sixty-sixth Ave., Philadelphia, will be in charge.

Paragon Worsted Co., Providence, R. I., has begun construction of two-story and basement mill addition, 40 x 52 ft., for which general contract recently was let to the Brien Building Co., 126 Clinton St., Woonsocket, R. I. Cost close to $50,000.

Wool Financial Notes

Sanford (Me.) Mills, report total earnings of $1,986,804, or $8.37 on the 234,980 shares of stock outstanding, against $5.73 per share in preceding year.

Blackinton Woolen Co., North Adams, Mass., suffered damage estimated at $10,000 by fire, believed to have been caused by spontaneous combustion.

Sterling Worsted Mills, Worcester, Mass.—John J. Power, liquidating agent for the Bancroft Trust Co., and Will L. Sargent of Boston, a merchant, have been appointed co-receivers. The mills were sold at an assignee's sale some time ago to the Sterling Mills, Inc. John J. Moynihan is president of the new company now operating the property. The action does not affect the new company which is operating full time.

Yale (Mich.) Woolen Mills, Inc., has increased its capital stock from $1,000,000 to $1,500,000.

S. Stroock & Co., Newburgh, N. Y., report net profit of $217,859 for 1936, comparing with $213,065 for 1935.

Muncy (Pa.) Woolen Mills, idle almost continuously since 1930, have been purchased by S. L. Hoffman & Co., 1350 Broadway, New York, N. Y., which will remodel and occupy for new plant for production of bathrobes and kindred products.

Harding Carpets, Lt., Brantford, Ont., for the fiscal year ended Oct. 31, 1936, had a net profit of $54,322 compared with a net of $34,480 for the previous year.

Rayon & Silk Mill News

Uncasville-Shelton Co., Montville, Conn., in voluntary dissolution, has transferred all assets to Sidney Blumenthal & Co., Inc., New York.

R. G. Buser, Silk Corp., Paterson, N. J., has concluded negotiations for purchase of local mill of National Dyeing & Printing Co., on East Fifth St., including tract of more than 2 acres of land, and will use for expansion. Present mill units on the site total about 75,000 sq. ft. of floor space.

Tubize Chatillon Corp., New York, N. Y., has work under way on superstructures for new additions to rayon mill at Rome, Ga., for which general contract was awarded recently to the Batson-Cook Co., West Point, Ga., and work on buildings is scheduled for completion in the spring, when close to 500 additional operatives will be added to the working force. Entire project will cost about $2,000,000. Robert & Co., Atlanta, Ga., are architects and engineers.

Pinehurst Silk Mills, Inc., Hemp, N. C., has superstructure under way on new one-story mill addition, 165 x 210 ft., and will use for expansion in throwing division. It is expected to have the structure ready for service at early date.

Mill News

Shuler & Benninghofen, Hamilton, Ohio, have installed an H-W conditioner for setting twist, as have also the **Cleveland (Tenn.) Silk Mills, Inc.,** and **Richard V. Butler,** old Forge, Pa.

Tioga Silk Co., York, Pa., has work under way on expansion and improvements in mill, to include installation of about 50 additional looms and auxiliary equipment. Large increase in present capacity will be carried out.

Gloria Rayon Mills, Inc., Johnson City, Tenn., have approved plans for one-story mill addition, to be used primarily for storage and distribution. Cost about $20,000.

Burlington Mills, Inc., with headquarters in Greensboro, N. C., will locate a branch unit at Galax, Va., which when at capacity production will employ about 250. A group of Galax business men headed by Gordon C. Felts has acquired a 10-acre tract as site for a 100 x 300 ft. brick structure.

American Silk Mills, Inc., Orange, Va., have plans nearing completion for new one-story addition for expansion in weaving and throwing divisions. New equipment will be installed. Cost close to $65,000, with machinery.

Viscose Corp. of Virginia, Roanoke, Va., has arranged for purchase of additional tract of about 263 acres of land at Front Royal, Va., adding to site recently acquired for a new rayon mill, and making a total tract of 331 acres of land said to have cost $53,000. Plans for mill units will be completed at early date. Plant will comprise large group of one and multi-story buildings, reported to cost over $1,000,000, with equipment.

Rayon & Silk Financial Notes

Putnam (Conn.) Spinners, Inc., rayon yarn firm, is reported as planning to move its mill from the Connecticut town to King's Terminal, South Boston, Mass. Much machinery has already been moved. The Putnam mill has not been in regular operation for nearly a year.

Cheney Brothers, South Manchester, Conn., have arranged for loan of $1,081,000 through RFC, in connection with reorganization plans now being consummated.

Julius Brewer & Sons, Inc., Paterson, N. J., is in hands of George F. Miller as custodial receiver.

Beaunit Mills, New York, N. Y., have purchased 52% of the stock of the reorganized **National Weaving Co.,** Lowell, N. C. The plant is reported to have 888 looms and the property to comprise 477 acres with mill and village.

John Dunlop's Sons, Inc., New York, N. Y., have sold their branch plant at Shickshinny, Pa., comprising about 40,000 sq. ft. of land and mill unit of 25,000 sq. ft., floor space, to the municipality, which will convert the property into a recreation center and playground for the community.

Welwood-Norwich Ribbon Factories, Inc., New York, an interest of John C. Welwood Corp., have taken over the plant of the Frank Silk Mills, Murfreesboro, Tenn., and will operate in conjunction with the Welwood Rayon Mills, Inc., owned by the same interests, with local mill.

Carter Fabrics Corp., Greensboro, N. C., which will manufacture rayon fabrics on a large scale in a plant to be built on South Elm street extension, has filed articles of incorporation. The incorporators are W. J. Carter, W. H. Holderness and T. H. Brooks, all of Greensboro.

Esther Mills Co., Shelby, N. C., has been organized to replace Eton Mill Co., of the same city. Owners are C. C. Blanton, J. R. and Charles Dover, J. R. Dover, Sr. estate, and F. R. Morgan, all of Shelby, and John Fox, of New York. The reorganized company, employing about 400 persons, manufactures dress goods and rayon fabrics.

Industrial Rayon Corp., Cleveland, Ohio, has arranged for additional stock issue of 151,625 shares, the proceeds to be used for proposed new mill in Painesville Township, near Painesville, Ohio, where company recently acquired a tract of about 400 acres of land. It is proposed to begin work on mill soon. Wilbur Watson & Associates, Inc., 4614 Prospect Ave., Cleveland, are architects and engineers.

Rayon Corp. of America, Inc., has been chartered in Allentown, Pa., with a capital of $25,000, to manufacture and deal in textiles, by Isadore Rapoport, David Getz and Grace M. Rohler.

Knitting Mill News

Santa Anita Knitting Mills has been established at 2300 South Santa Anita Avenue Arcadia, Calif. by Samuel Fischer.

Cartersville (Ga.) Mills, Inc., has begun the construction of an addition to the present knitting plant. Eugene Smith, Cartersville contractor, is in charge of the work. The new building will measure 48 x 60 ft. and is being erected to balance production, enabling the plant to knit a variety of fabrics without the necessary changes required to change over machines from one fabric to another.

Royal Mfg. Co., Washington, Ga., has installed 60 machines in its new 100 x 240 ft. building.

Real Silk Hosiery Mills, Inc., Indianapolis, Ind., have concluded arrangements for establishment of a new branch mill at Durant, Miss. A building will be erected by the city, for which a bond issue of $25,000 has been authorized, to be occupied under long-term lease.

Claussner Hosiery Co., Paducah, Ky., has installed an H. W. silk conditioner.

Durant (Miss.) Mfg. Co. has been organized to manufacture women's hosiery. Taxpayers of the city voted 330 to 19 to erect a $25,000 plant. The city was the first to take advantage of Governor White's plan to industrialize Mississippi by financing the establishment of new plants in the state.

Meridian (Miss.) Hosiery Mills have concluded negotiations with city for the construction of a new local mill, to be owned by the municipality and occupied under long-term lease. General contract, awarded to E. J. Vaughn, Meridian, calls for a one-story, 175 x 210 ft. plant. It will be equipped with 68 full-fashioned machines and 24 safety high-speed machines. It is estimated to cost over $700,000, with machinery. Krouse & Brasfield, Meridian, are architects.

H. R. H. Silk Hosiery Mills, Inc., Moberly, Mo., has plans for one-story mill addition, 40 x 60 ft., for which bids will be asked on general contract in February. Ludwig Abt, Riegel Building, is architect.

Sulloway Mills, Franklin, N. H., has established a new hydroelectric power station. Power from the company's dam will be converted into electricity in the new station and the electric energy will be used to operate machinery now operated directly by water power from a turbine wheel.

Morgan Clan Knitting Mills, Inc., 717 Broadway, Newark, N. J., has been formed to make knitted suits and sweaters. Hugh T. Morgan, president and sales director of the new company, was formerly with Morgan & Goetze Knitting Mills, Irvington, N. J.

Irving Finkelstein has organized **Divera Sportswear, Inc.,** with factory at West New York, N. J., where a complete line of beachwear for the wholesale trade is being manufactured for the coming season.

Hoosick Falls (N. Y.) Undergarment Co. has installed new machinery for the manufacture of rayon and cotton polo shirts.

Sinclair Knitting Mills, Inc., 725-27 Broadway, New York, N. Y., have leased an entire floor in adjoining building at 721-23 Broadway and will occupy for expansion in manufacture.

Finer Full-Fashioned Hosiery Mills, Charlotte, N. C., recently organized, began operations late in January in a building leased on the old Pineville Road. The company began operations with three knitting machines and 20 employes. August Nordmann heads the company.

Chipman LaCrosse Hosiery Mills Co., Inc., East Flat Rock, N. C., is constructing a

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Mill News

106 x 107 ft. addition to house additional full-fashioned hosiery machinery. The building, containing approximately 10,000 sq. ft. of floor space, is expected to cost around $300,000 with equipment. The company at present has in operation two plants, one of which is located in Hendersonville, N. C.

Scott Hosiery Mills, Graham, N. C., has bought from Robert Reiner, Inc., two additional Einsiedel-Reiner leggers, making a total of 25 Einsiedel-Reiner full-fashioned machines for the Scott mills.

Lincoln Knitting Mill, Maiden, N. C., is moving the equipment into new and larger quarters in the Harrellson Building in East Maiden.

North State Hosiery Mill, Inc., Rockingham, N. C., recently organized with capital of $500,000, by W. B. Cole, president and treasurer, Hannah Pickett Mills, Rockingham, has let general contract to C. M. Guest & Sons, Inc., Anderson, S. C., for one-story mill for new full-fashioned plant to be equipped with 20 24-section machines. Cost about $150,000, with equipment. H. V. Biberstein, Charlotte, N. C., is architect and engineer.

Ohio Pennant Knitting Co., Columbus, Ohio, has completed the rebuilding of portion of mill, comprising second and third floors, recently damaged by fire, and has resumed production on normal basis.

Greene Lane (Pa.) Hosiery Mills will soon make extensive alterations to the present mill.

Oakbrook Hosiery Mills, Reading, Pa., has installed an H-W conditioner for setting twist on yarns.

Dexdale Hosiery Co., Lansdale, Pa., is replacing its old-type machinery with new single-head unit Wildmans.

Champion Knitting Mills, Chattanooga, Tenn., which now is operating only one plant at Marietta, Ga., has been purchased by **Holeproof Hosiery Co.** Clyde S. Winkins, president, and Guy Northcutt, secretary and treasurer of Champion, will continue in operating charge of the Marietta mills. It is understood that Holeproof acquired the southern mill whose product it had previously bought on contract by exchanging its own common and preferred stock for the entire stock issue of Champion, totaling $525,000.

Charleston Hosiery Mills, Cleveland, Tenn., have leased space in local building on Thirty-first St., and will establish a new branch mill at that location for production of anklets for children and kindred knit hose.

Milne Hosiery Mill, Cleveland, Tenn., recently organized by John Milne, formerly president of the Cleveland (Tenn.) Chair Co., and associates, is planning early establishment of a local mill for the manufacture of hosiery for children, with initial capacity of 800 doz. pairs per week.

E-Z Mills, Inc., Hoosick Falls, N. Y., is now constructing a new brick addition, 52 x 52 ft., at its Bennington, Vt., factory.

Lynchburg (Va.) Hosiery Mills, Inc., is constructing a 50 x 140 ft., two-story addition to connect the two present units on Fort Ave. The building is expected to cost more than $25,000, exclusive of equipment, and will contain machinery for dyeing.

Knitting Financial Notes

California Beachwear, Inc., Los Angeles, Cal., has been organized with capital of $25,000, to operate a local mill. Louis Tabak, Los Angeles, is one of the incorporators of company, which is represented by Jack G. Schapiro, Lincoln Building, Los Angeles.

Wyoming (Del.) Hosiery Mills have been formed with capital of $25,000, to operate a knitting mill in this vicinity. William Virden, Wyoming, is one of the principal incorporators.

Flodine Knitting Mills, Inc., Haverstraw, N. Y., have been organized with capital of $20,000, to operate a local mill and will proceed with production at early date. New company is represented by Hyman A. Bettigole, 9 East Fortieth St., New York, N. Y., attorney.

T. Manley Whitener, of Hickory, N. C., former Catawba County attorney, has purchased the interest of C. H. Henderson in the **Whitener Hosiery Mills,** Hickory, making him the sole owner of the industry.

C. H. Henderson, Hickory, N. C., has sold his partnership interest in the **James Knitting Mills,** Hickory, to A. N. James of Mount Pleasant, N. C., who has become sole owner of the mills. Mr. Henderson will continue for the time being as general manager and when relieved of these duties will continue as sales manager.

D. J. Brown of Hickory, N. C., an executive of the Hickory Knitting Mills, of which there are about 23 plants, plans the establishment of a new knitting mill at Mooresville, N. C.

North State Hosiery Mills, Inc., of Rockingham, N. C., has been organized to manufacture silk hose and hosiery under an authorized capitalization of $500,000, with $10,000 stock subscribed by W. B. Cole, A. B. Cole and others.

Ritter Hosiery Co., Fleetwood, Pa., has been adjudicated a voluntary bankrupt.

Leonard H. Neuman, 1529 Nedro Ave., Philadelphia, Pa., and associates, have organized the Harvard Knitting Mills, with plant and headquarters at 1220 Cherry St., that city.

Progressive Knitting Mills of Pa., has been organized in Philadelphia, Pa., with headquarters at 1228 Cherry St., by Leonard H. Neuman and associates.

Resolute Knitting Mills have been organized in Philadelphia, Pa., with headquarters at 257 West Diamond St., by H. L. Munz, 344 Fanshawe St., and S. F. Trojan, 1313 St. Vincent St.

Milwaukee (Wis.) Goodwill Industries, which provides employment, training and rehabilitation for handicapped and needy persons, has purchased the plant of the Van Dyke Knitting company, Milwaukee, Wis.

Processing Plant News

Pond Lily Co., New Haven, Conn., has awarded a contract to the United Building Co., West Haven, for erection of an addition to its bleach house on Whalley avenue. The addition, one story, of mill construction, will be 32 x 50 ft. with a wing 44 x 14 ft.

Belding Silk Mill, Rockville, Conn., closed for 10 years, is to be occupied by a newly organized silk and rayon dyeing firm, which may later add a weaving department.

Standard Textile Products Co., Clifton, N. J., is considering early rebuilding of portion of local mill, recently destroyed by fire. Loss estimated over $150,000, including equipment.

Sayles Biltmore Bleacheries, Asheville, N. C., is installing replacement equipment at the cost of between $25,000 and $30,000.

Armco Finishing Co., Burlington, N. C., announced through the Greensboro Chamber of Commerce, Jan. 24, that it had completed the purchase of 15 acres of land just outside the city limits of Greensboro, and that the company would call for bids for erection of a modern mill building, 60 x 300 ft., costing approximately $100,000, for a finishing plant for silk, rayon and other flat textile work, shortly after Feb. 1. Plant will cost around $100,000 and will employ from 100 to 150 workers.

Southern Dyers, Inc., Burlington, N. C., have begun erection of one-story mill addition; general contract let to George W. Kane Co., Greensboro, N. C. It will cost about $40,000, with equipment. The structure is owned by the Burlington Mills, Greensboro, with which first noted company is affiliated. David A. Fiske is company engineer.

Clough Bleach & Dye Works, Philadelphia, Pa., has been formed by Harry Clough to do skein and warp bleaching and dyeing. Mr. Clough was formerly vice-president of Phoenix Dye Works, Philadelphia.

L. H. Miller & Son, Port Carbon, Pa., have plans maturing for one-story branch mill at Pittsville, Pa., to be used as a bleach and dye works. Bids will be asked on general contract early in the spring. It is reported to cost about $40,000, with equipment. W. J. Senner, 529 Court St., Reading, Pa., is architect.

Rock Hill Printing & Finishing Co., Rock Hill, S. C., has plans for new addition to boiler house at local mill, to include installation of new boiler unit and auxiliary equipment. Cost about $75,000. Robert & Co., Atlanta, Ga., are architects and engineers.

Dyers & Rubberizers, Ltd., London, Ont., Canada, is establishing a plant in Toronto for rubberizing textiles.

Holdsworth Co., Ltd., Montreal, Que., has begun construction of new branch dyeing and finishing mill at 349 Carlaw Ave., Toronto, Ont., where site was recently acquired, to be one-story, 120 x 175 ft., for which general contract has been awarded to the Toms Contracting Co., Ltd., Mimico, Ont. It will cost over $100,000, with equipment.

Processing Financial Notes

Springfield Dyeing Co., Bordentown, N. J., has been formed with capital of $125,000, to operate a textile dye and print works, and will take over local property at once for new mill. Company is represented by Eugene P. Bachmann, Jr., Bordentown, attorney.

Dawn Dyeing & Finishing Co., Inc., Passaic, N. J., has been chartered with capital of 1000 shares of stock, no par value, to operate a local dye and finishing works. New company is represented by Barnett Berr, 68 Lexington Ave., Passaic, attorney.

Plymouth Piece Dye Works, Inc., Paterson, N. J., has been chartered with capital of 1000 shares of stock, no par value, to operate a local dye and finishing mill. New company is represented by Meyer W. Stein, 64 Hamilton St., Paterson, attorney.

Emerald Dyeing & Finishing Corp., Poughkeepsie, N. Y., has been formed with capital of $50,000, to operate a local dye and finishing works. New company is represented by Charles J. Corbally, 226 Union St., Poughkeepsie.

Coronet Piece Dye Works, Inc., Long Island City, N. Y., has been formed under direction of Continental Lawyers Albany Service, 305 Broadway, New York, with capital of $20,000, to operate a local dye and finishing mill.

Footer's Dye Works is being organized and incorporated in Philadelphia, Pa., to establish and operate a plant for the dyeing of textiles, knit goods and other materials. John W. Hallahan, Bankers' Security Bldg., represents the firm.

Union Bleachery, Greenville, S. C., community house has work under way refinishing and refurnishing the building. Jesse Brown is the new community work secretary.

Miscellaneous Mill News

Angeles Quilt & Pad Co. has been established at 1206 West Venice Boulevard, Los Angeles, Calif., by Nat Shipper of 2745 Blanchard street.

Wovencraft, Inc., Clinton, Mass., manufacturers of woven labels, employing 70 workers, has been in operation three years, and is installing 45 new looms and will more than double its output in the next six months.

National Automotive Fibres, Inc., Detroit, Mich., will build a $250,000 plant on Randolph Street, Los Angeles, Calif., to be ready by May 1. It will employ 200 on trimming material for automobiles.

Walcott & Campbell Spinning Mill, Gulfport, Miss., old plant, has been purchased for a modern garment plant. Pajamas and shirts will be manufactured and nearly 1000 workers employed.

William F. Pritz, formerly of Paterson, N. J., opened a small textile plant at Allensville, Ky., last month for the manufacture of woven hat bands and clothing labels. A carload of machinery was installed.

Southwell Mfg. Co., Philmont, N. Y., has been organized and is now producing cotton, woolen, merino and rayon garnetted stocks. The plant dyes raw stock and is installing a carbonizer. H. W. Southwell, formerly with Atlas Waste Mfg. Co., Glendale, L. I., is in charge.

Filatex Corp., Northampton, Pa., manufacturer of elastic yarns, has concluded arrangements for purchase of former plant of Belle Mead Sweets, Inc., in Prospect St. district, Trenton, N. J., comprising main one-story unit, 60 x 350 ft., and two-story office building adjoining.

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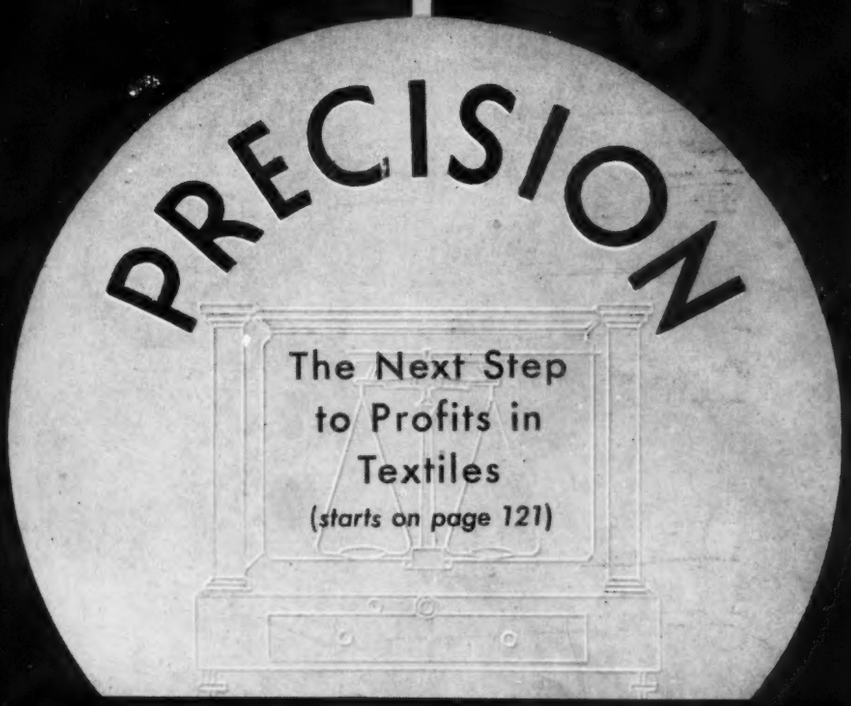
TEXTILE WORLD



ANNUAL REVIEW AND FORECAST NUMBER

During

the year

1 9 3 6

49

Southern and New England Mills ...

representing

1,720,000

Spinning

Spindles ...

purchased

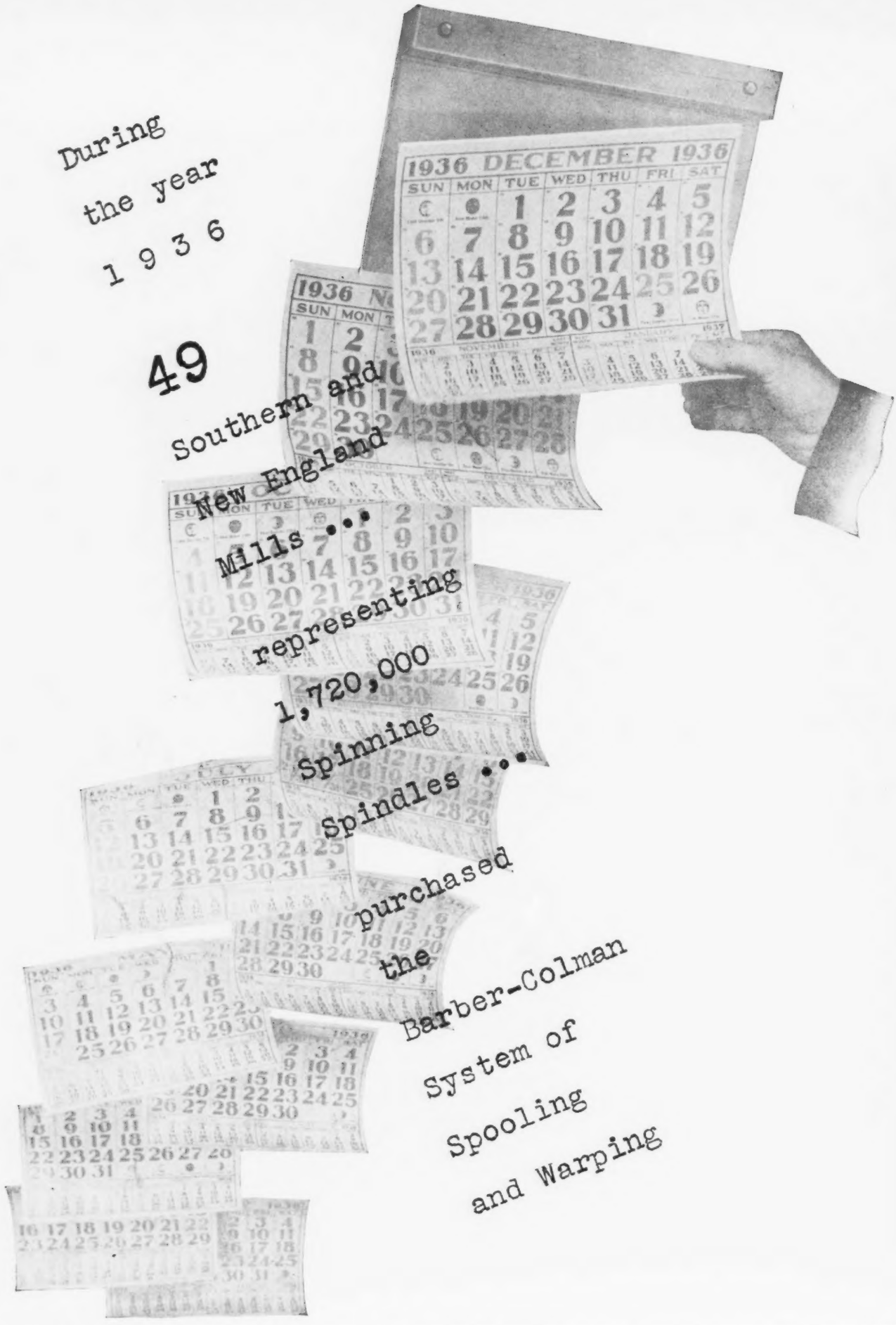
the

Barber-Colman

System of

Spooling

and Warping



TEXTILE WORLD, Vol. 87, No. 3. February, 28, 1937. Published monthly except February and semi-monthly in February of each year by McGRAW-HILL PUBLISHING CO., INC.—(Bragdon, Lord & Nagle Division)—Publication Office, 99-129 North Broadway, Albany, N. Y. Editorial and Executive Offices: 330 West 42nd Street, New York, N. Y.—Subscriptions United States and Possessions, and Canada $3.00 a year; all other Countries, $5.00. Entered as Second Class Matter, August 25, 1936, at Post Office, Albany, N. Y., under the Act of March 3, 1879. Printed in U. S. A. Thirty-five cents per copy. Special issues one dollar per copy.

500 X Model Looms
Will Weave As Much Cloth

Per Week

As 600 E Model Looms

And When They Are Installed
and Fully Equipped in Your Mill

They Will Have Cost You
Much Less Than the 600 E's

It Is Your Total Investment
Not Price Per Loom that Counts

On the Basis of
the Yards of Cloth
They Will Weave

X Model Looms Cost You Less

Than Any Looms You Have Bought from Us in the
Past 20 Years

Let's Talk It Over

DRAPER CORPORATION

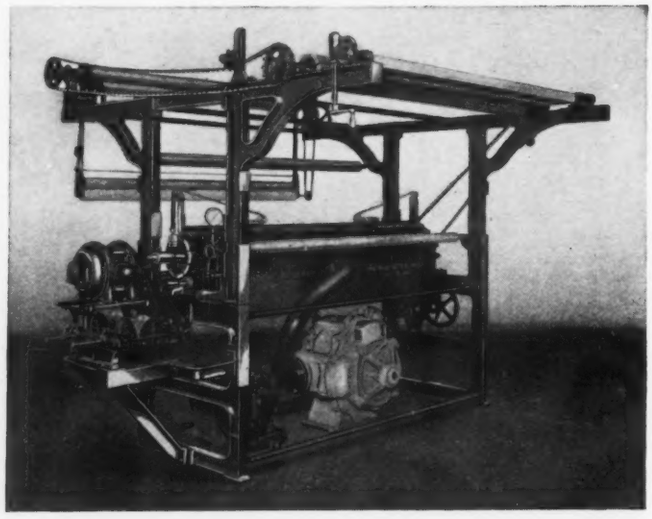
Atlanta Georgia Hopedale Massachusetts Spartanburg S C

Extract Water or Acid From Your Fabrics

Efficiently

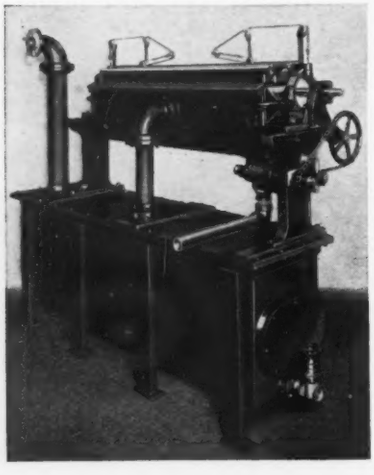
WITH THE

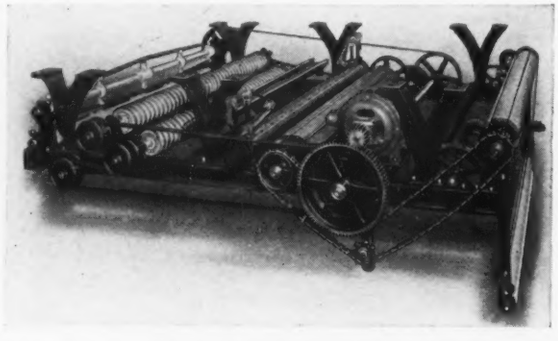
Gessner Vacuum Extractor

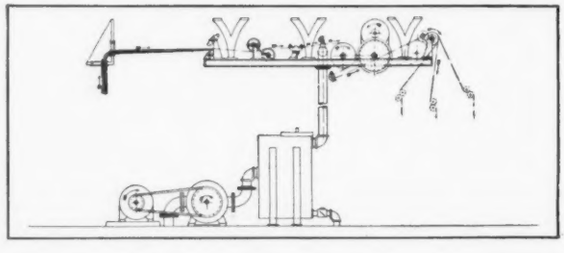


WOOLEN, worsted and rayon manufacturers recognize with increasing frequency, the advantages of vacuum extracting over all other methods of removing water and acid content. The efficiency of Gessner applications of this principle has strengthened this belief.

Gessner Vacuum Extractor pumps are protected by stripping tanks both from acid and accumulation of flocks. This exclusive Gessner development assures efficient extracting indefinitely on all Gessner Vacuum Extractors: (1) the machine built for removing water from cloth in the open width; (2) the Vacuum Extractor attachment built into a Scutching Machine or cloth opener, where the wet cloth in rope form is opened, extracted and delivered folded in full width; (3) the machine which extracts either a weak solution of sulphuric acid or a weak solution of aluminum chloride to return the extracted solution to the tank; and (4) on special applications of vacuum extracting for removing surplus water before drying.







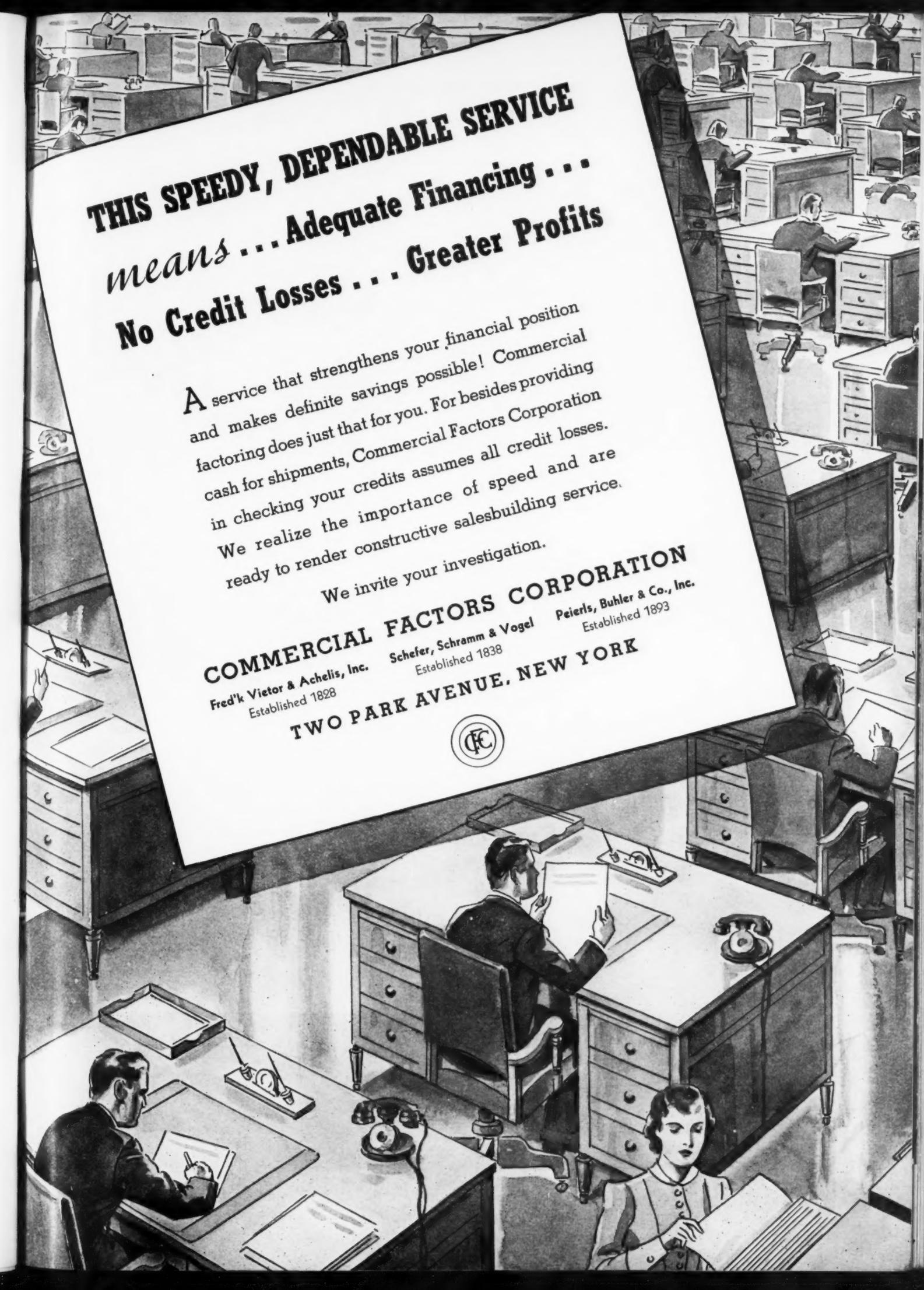
DAVID GESSNER CO. Worcester, Mass.

Hand and Feel and Eye Appeal

Gessner

IMPROVED CLOTH FINISHING MACHINERY

Vacuum Extractors, Scutching Machines, Gigs
Decating Machines, Decating Aprons, Brushes
Spot Proofing Machines, Nappers, Presses


THIS SPEEDY, DEPENDABLE SERVICE
means . . . Adequate Financing . . .
No Credit Losses . . . Greater Profits
A service that strengthens your financial position and makes definite savings possible! Commercial factoring does just that for you. For besides providing cash for shipments, Commercial Factors Corporation in checking your credits assumes all credit losses. We realize the importance of speed and are ready to render constructive salesbuilding service.
We invite your investigation.
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Fred'k Victor & Achelis, Inc.
Established 1828
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Peierls, Buhler & Co., Inc.
Established 1893
TWO PARK AVENUE, NEW YORK
CFC

QUALITY
When you install new Union Specials, you know you are getting the best that money can buy . . . and time will prove that they cost less in the long run.
UNION SPECIAL DOUBLE LOCKED STITCH
LOCK UNION SPECIAL STITCH
UNION SPECIAL
MACHINE COMPANY
400 North Franklin Street . . . CHICAGO, ILL.

A BATCH OF BLEACH BOTTOM PINK DYED IN A STAINLESS STEEL MACHINE

A Product of Franklin Process Specialization
Cotton-covered Lastex yarns and similar products for women's girdles, waistbands, hosiery, suspenders, etc. have enjoyed a tremendous vogue in recent years. Franklin Process pioneered in the coloring of these yarns. Bleach bottom colors for these yarns, such as "flesh" and "peach" are standard in name, but usually "special" for each customer. Economies from color standardization by the trade are possible in this field.

THE REWARDS OF SPECIALIZATION

Yours as well as ours

• The automotive industry has taught us all that specialization on a few items makes for quantity production which in turn lowers costs for the manufacturer and the consumer. This company specializes in the package dyeing of yarns.

• Specialization in the job dyeing industry is not possible to the same extent as in the automotive industry because each order is an individual problem. However, by proper grouping of his orders each day, a job dyer can often create opportunities for quantity production that are not given to many smaller dyeing plants. Furthermore, the larger the job dyer, the more opportunities for such savings.

• Franklin Process has specialized in package dyeing since 1910. Last year its total production was more than 17,000,000 lbs. This tremendous output, plus the fact that we encourage our customers to select standard shades where practical, has resulted in important economies in some classes of work which we have passed on to our customers from time to time; also in superior quality that is the natural result of our unmatched experience.

• Are YOU enjoying the benefits of Franklin Process specialization and the winding economies of the Franklin Package? If you are already a customer, are you economizing by ordering STANDARD shades wherever possible?

Franklin Process

SPECIALISTS IN PACKAGE DYEING SINCE 1910

Colored Yarns *Glazed Yarns* *Custom Yarn Dyeing* *Dyeing and Processing Machines*

PROVIDENCE • PHILADELPHIA • GREENVILLE • CHATTANOOGA • CHICAGO • N. Y. REPRESENTATIVE, 40 WORTH ST.

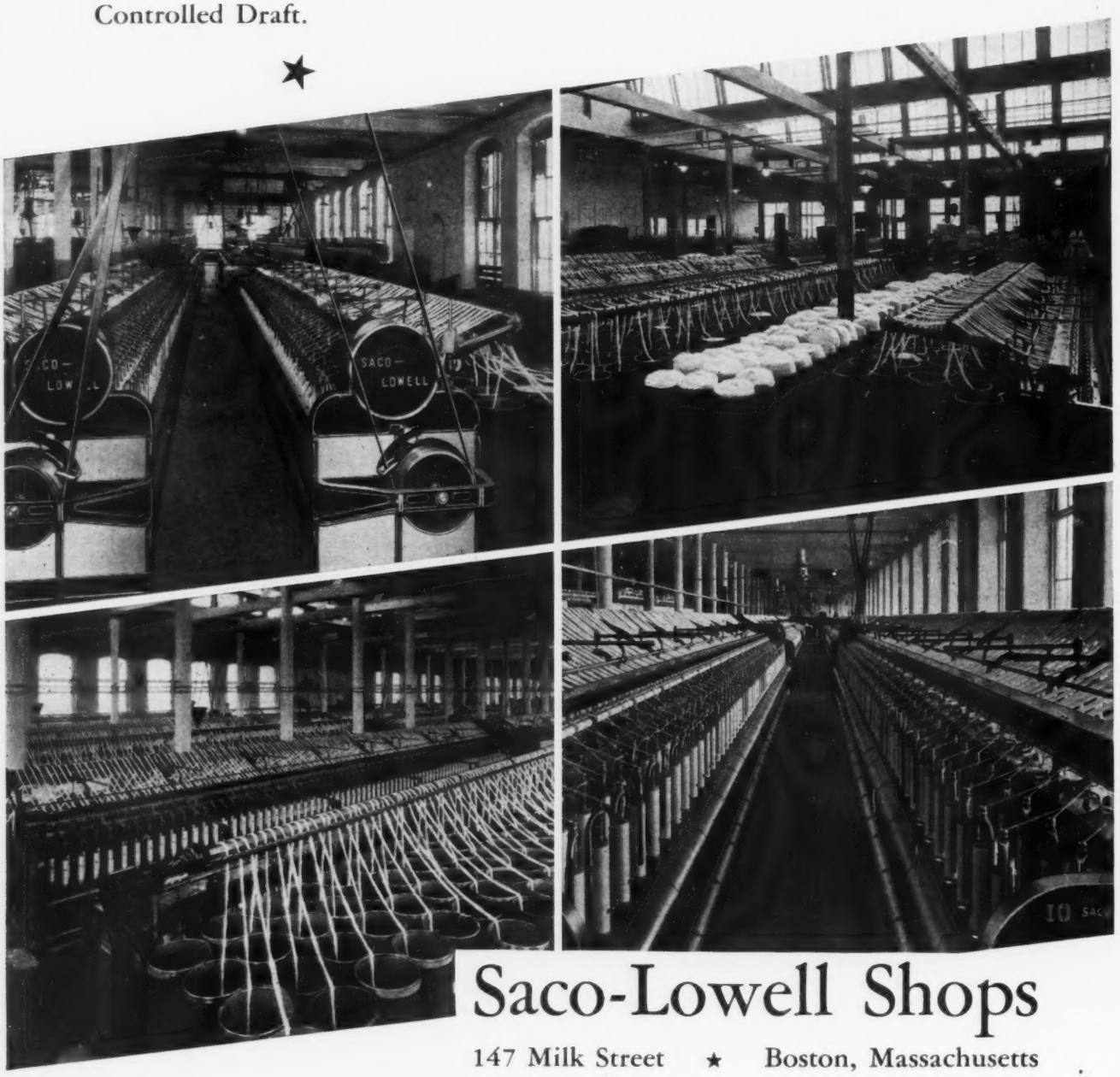
Saco-Lowell CONTROLLED DRAFT ROVING *is truly*

"THE SHORT CUT to PROFITS"

In mills North and South, as well as foreign countries, where "Quality is Paramount" these improved Roving Frames have more than made good. No producer of yarns, whether on coarse, medium, or fine counts can afford to overlook this improvement in Card Room processes.

There is no investment in equipment which will pay larger or quicker returns. That is why the trend in roving is definitely toward Saco-Lowell Controlled Draft.

★



Saco-Lowell Shops

147 Milk Street ★ Boston, Massachusetts

SAVE · BY · MODERNIZING

**STAINLESS STEEL DYE BECK—
SHALLOW TUB CONSTRUCTION**

Self supporting—stainless steel reels. May be equipped with unloading device if desired. Individual motor drive—gear type. Machine equipped with idler reel.

IF IT IS STAINLESS STEEL DYEING EQUIPMENT...

We make it!

FOR THE DYER AND FINISHER

THROUGH intensive research we have perfected a method of welding and fabricating this popular metal and can furnish drying cylinders—dyeing machines (all metal or with lined tanks)—or special machines made to your order.

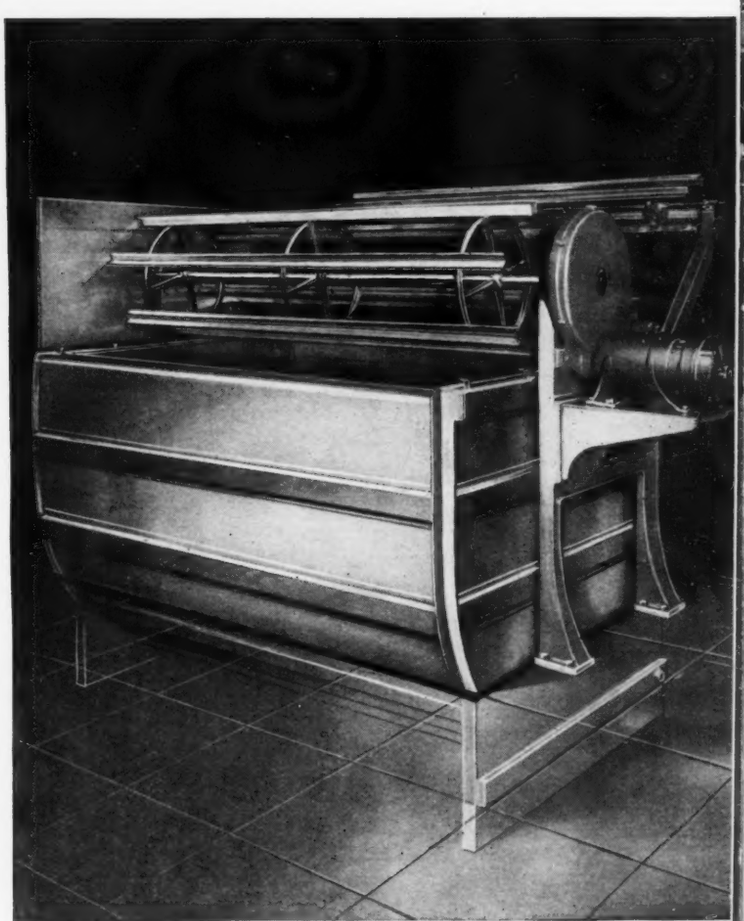
Put any problem pertaining to stainless steel equipment for the Dyer or Finisher up to us.

Remember: We make the complete line of **KLAUDER WELDON DYEING MACHINERY** and can furnish parts for any KLAUDER WELDON Machine

H. W. BUTTERWORTH & SONS CO.
PHILADELPHIA, PA.
Established 1820
PLANTS at PHILADELPHIA and BETHAYRES, PA.

New England Office:	Southern Office:	In Canada:
TURK'S HEAD BUILDING	JOHNSTON BUILDING	W. J. WESTAWAY CO.
Providence, R. I.	Charlotte, N. C.	Hamilton, Ontario

★

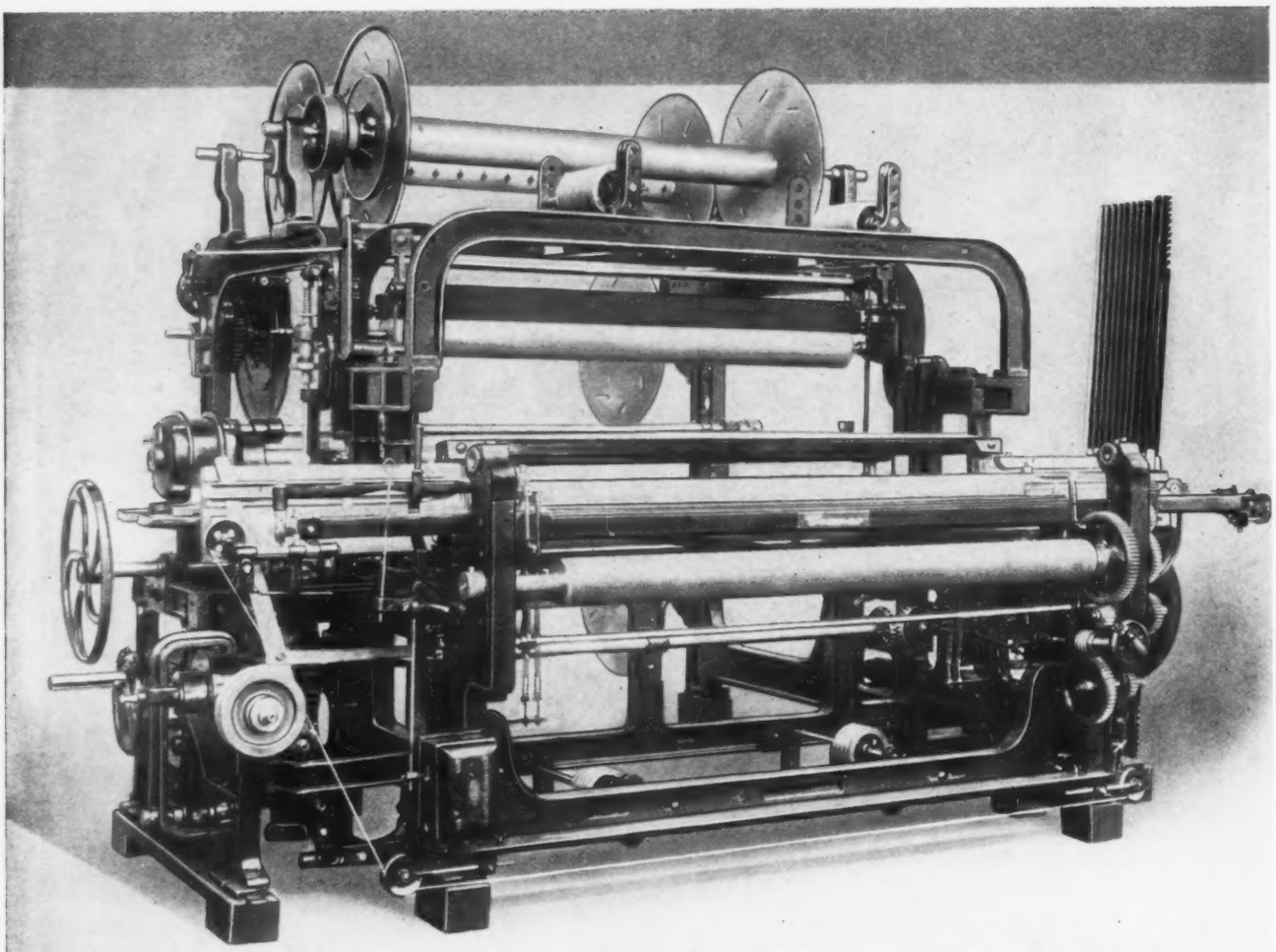


**STAINLESS STEEL PIECE DYE KETTLE
—DEEP TUB CONSTRUCTION**

Tub is self supporting type and sets on foundation below floor level. Individual motor drive—gear type. Machine is equipped with idler reel and an unloading device with automatic stop motion.

BUTTERWORTH *finishing* MACHINERY

A COMPLETE LINE OF FINISHING AND RAYON MACHINERY FOR THE TEXTILE INDUSTRY



TONNAR DOUBLE SHUTTLE LOOMS

For Pile Fabric Weaving

Capacity: Built to weave the finest grades of velvets and the heaviest types of plushes. Up to 22 harness, five beams. New wide range pile let-off.

Design: New International Type, emphasizing sturdiness, flexibility, speed. Tonnar Standard Vertical Harness Levers. Enclosed Cams for positive harness control.

Experience: Since 1867—Tonnar Looms are the choice of the world's leading plush and velvet mills.

Use Our Service!

J. J. KREHBIEL COMPANY, Inc.

381 Fourth Avenue **New York**

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TEXTILE MACHINERY

L. F. Dommerich & Company

Executive and General Offices

271 MADISON AVENUE
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For Manufacturers and Merchants

Inquiries as to our services solicited

●

ESTABLISHED 1840

Now ELECTRIC BATCHER CONTROL ASSURES FIRM, EVEN ROLLS FROM THE TENTER

One of several electric batcher controls installed on Winsor & Jerauld tenters in the plant of the Mt. Hope Finishing Co., North Dighton, Mass.

WHATEVER the type of cloth, the electric drive and control system now being announced by General Electric makes possible faster production of rolls at the batcher and helps produce *solid* rolls, wrinkleless along the entire length, and *even* and straight at the ends.

Because tension on the cloth is so nearly constant, the G-E batcher control also helps to preserve the finish. Furthermore there is no distortion of pattern due to tension variations—as is sometimes the case with friction devices.

With this new control, tension is quickly and easily adjusted by turning the rheostat. The proper tension for any cloth is set beforehand by the operator; and because of the characteristics of the motor and control system, this tension is maintained as the roll builds up.

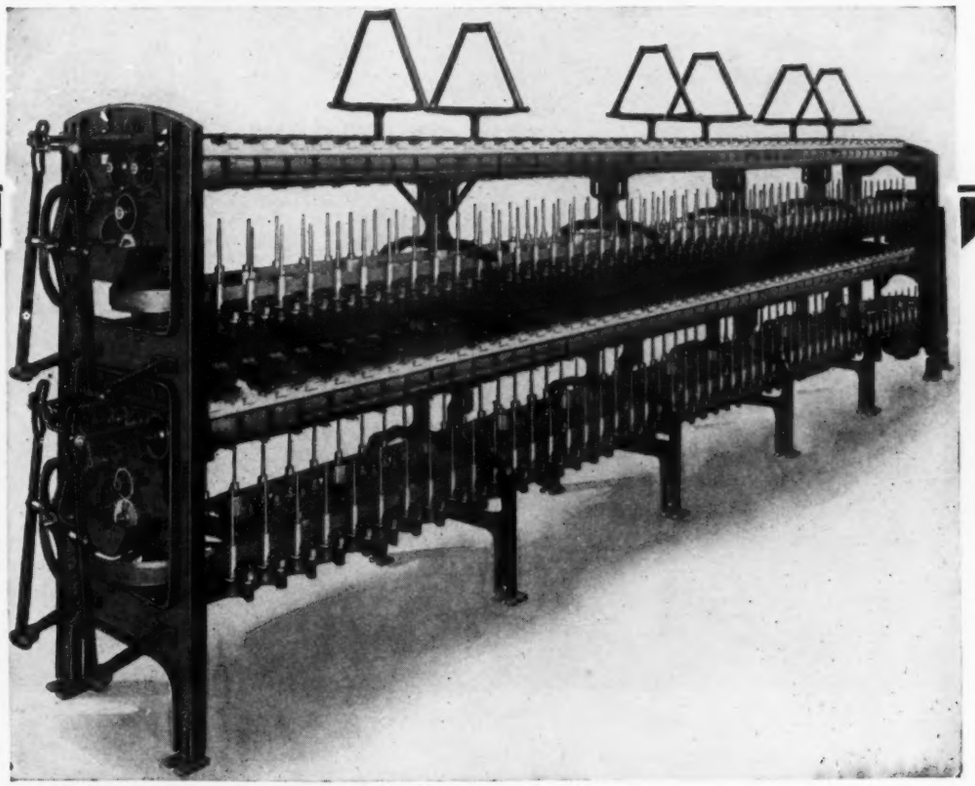
New as it is, this General Electric development has already been proved in mills in Massachusetts and Rhode Island. For information in regard to it, address General Electric, Schenectady, New York, stating the conditions of operation of your tenters.

This apparatus is designed primarily for direct current. However, since the amount of power required for winding is small, conversion equipment to obtain direct current is relatively inexpensive. Under certain conditions, the G-E batcher control can be applied to operate on alternating current.

011-177

GENERAL ELECTRIC

Get the FACTS and you'll get a FLETCHER!



THE FLETCHER "APEX" TWISTER

FLETCHER leadership in the manufacture of better throwing machinery for Silk and Rayon is well known to the textile industries.

We urge you to investigate, compare, and then draw your own conclusions. We have the FACTS —and they're yours upon request.

THE FLETCHER "WHIRLWIND" EXTRACTOR

Ten points of advantage give this Extractor every desirable mechanical feature. Stable, with even badly unbalanced loads, it is quiet, rugged and dependable, convenient and safely controlled. Easy to load and unload.

Details of this and the FLETCHER "Master" and "Junior" Extractors will be cheerfully furnished. You'll be interested.

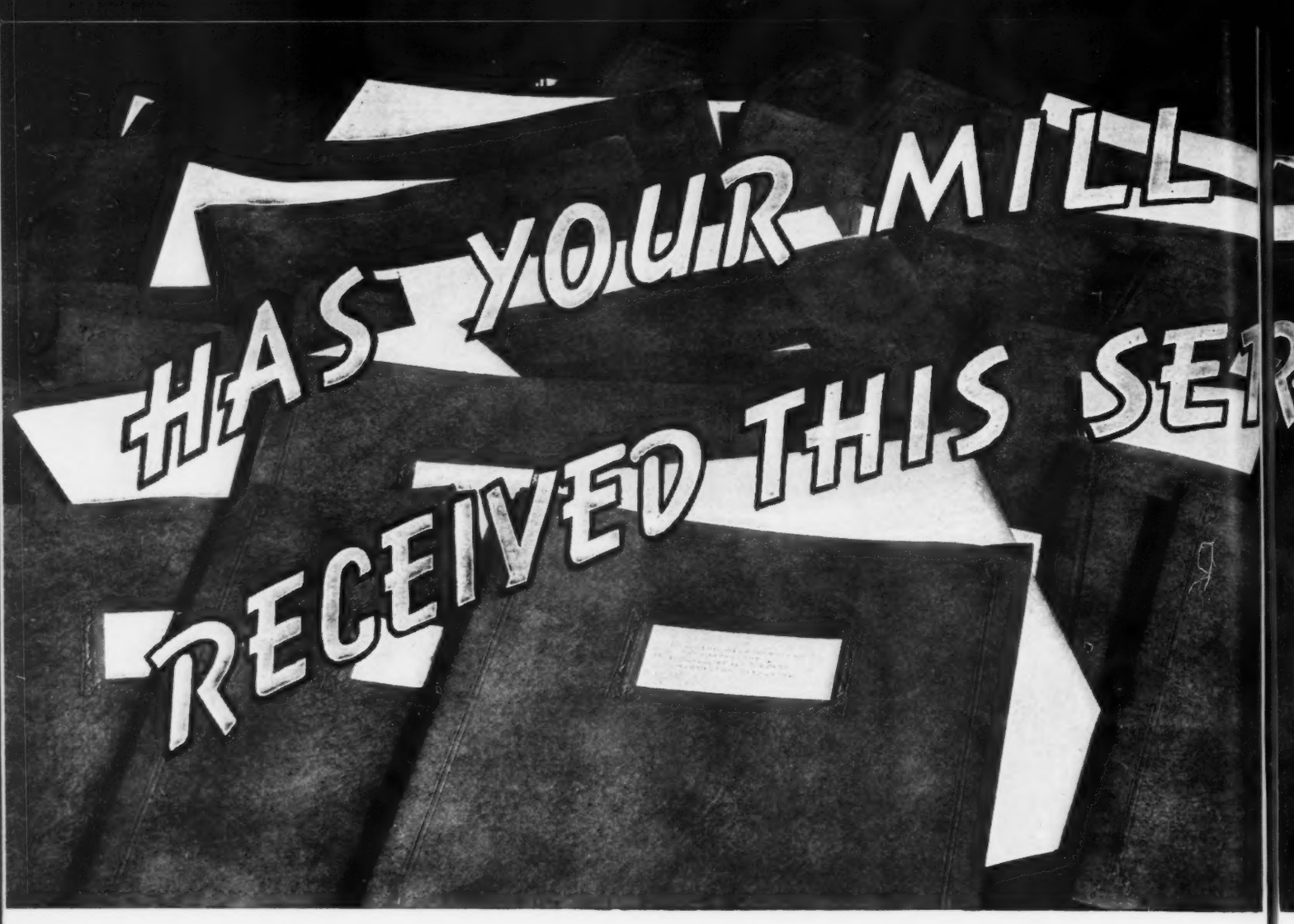
TWISTERS • REDRAWS • WINDERS
"DUPLEX" DOUBLER-TWISTERS
NARROW FABRIC LOOMS

FLETCHER

THROWING MACHINERY FOR SILK AND RAYON - - CENTRIFUGAL EXTRACTORS - - NARROW FABRIC LOOMS

FLETCHER WORKS • GLENWOOD AVENUE AND SECOND STREET • PHILADELPHIA

FORMERLY SCHAUM AND UHLINGER - ESTABLISHED 1850



WEAVE ROOM COSTS CAN BE LOWERED

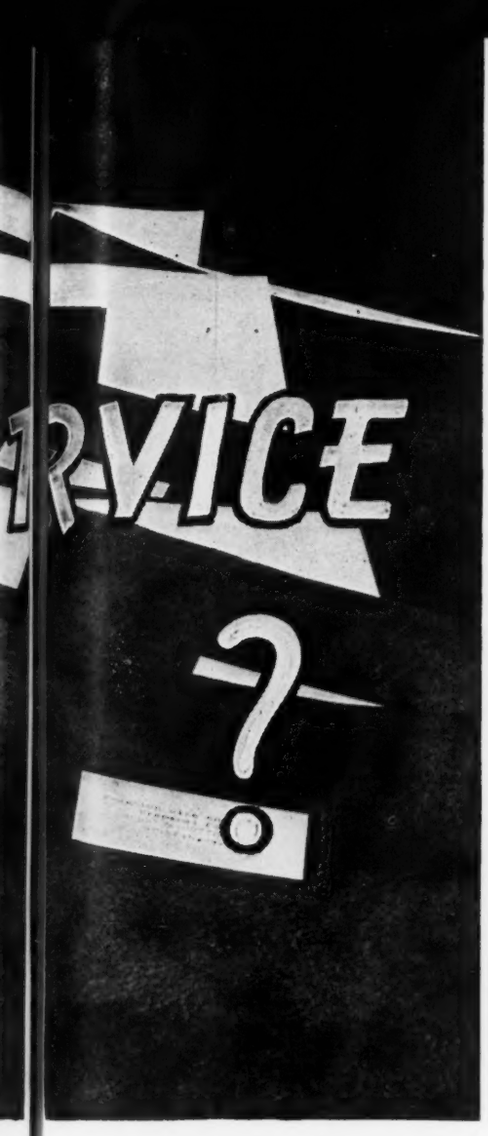
In this distinctive service originated by Houghton for cotton mills, a complete laboratory report is furnished on performance of sized warp. The mill will know exactly how much size has been added, and what increase in warp strength is due to sizing.

The mill executive can determine by this means whether or not a balanced size formula is being used . . . . if he is obtaining a good money value from his present sizing products . . . . what effect loom stoppages are having on production . . . . what steps may easily be taken to improve weave-room performance.

The Houghton Research Laboratories

This Size Check-up is made without interfering with regular production. It has helped scores of mills to reduced their sizing costs, and it is available to you, right now. With it goes a lifetime of experience in making sizing products and serving the cotton industry. The next page tells you how to get the whole story.

The HOUGHTON SIZE



These are Houghton Size Check-up Test Reports Covering Mills from Maine to Georgia

These reports include photomicrographs of your warps, such as shown below

How to Apply for the Test

This size Check-up Test costs you nothing, commits you to nothing. All Houghton asks is frank information as to the formula and yarn you are now using, and permission to visit your plant and learn first-hand the conditions to be met.

You will receive a confidential report, including photomicrographs, recommendations of changes if needed, and full data that should point the way to better weave room performance. As a first step, send us the coupon at the right, or ask the Houghton Man when he calls.

E. F. HOUGHTON & CO.

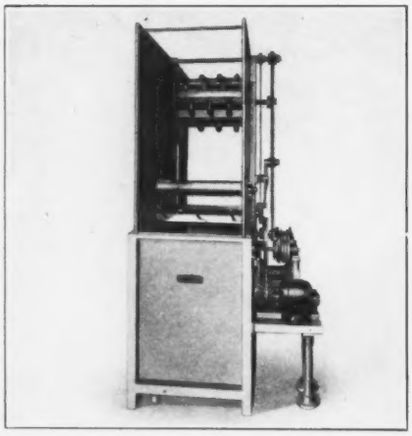
Main Office: 240 West Somerset Street, Philadelphia, Pa.
Southern Division Office: Charlotte, N. C.
New England Office: 88 Commercial Wharf, Boston, Mass.

CHECK-UP TEST

The Fleet MAKES HISTORY

THE CONSTITUTION DEFEATS THE JAVA

This naval battle occurred during the War of 1812. William Bainbridge, captain of the American ship Constitution, though severely wounded twice, remained on deck throughout the battle. Captain Lambert of the English vessel was killed.



UNIVERSAL SAMPLE KETTLE

As the Constitution and her sister ships made naval history, so is the Fleet Line of wet finishing machinery making textile history in its attack on inefficiency and inferior quality.

The sample kettle illustrated is an important contribution to finishing progress. It is equipped with variable speed, variable height reel, which allows dyeing conditions to be adjusted so that any length of cut from a 2½ yard sample to two full 80-yard cuts of dress goods can be handled. Plain slatted reel or hump reel are interchangeable. Stainless metal throughout (except driving mechanism). No boiling out required for color changes.

This machine (and all other Fleet Line equipment) is sold with a satisfaction or money back guarantee.

RIGGS & LOMBARD
Incorporated

LOWELL, MASS.

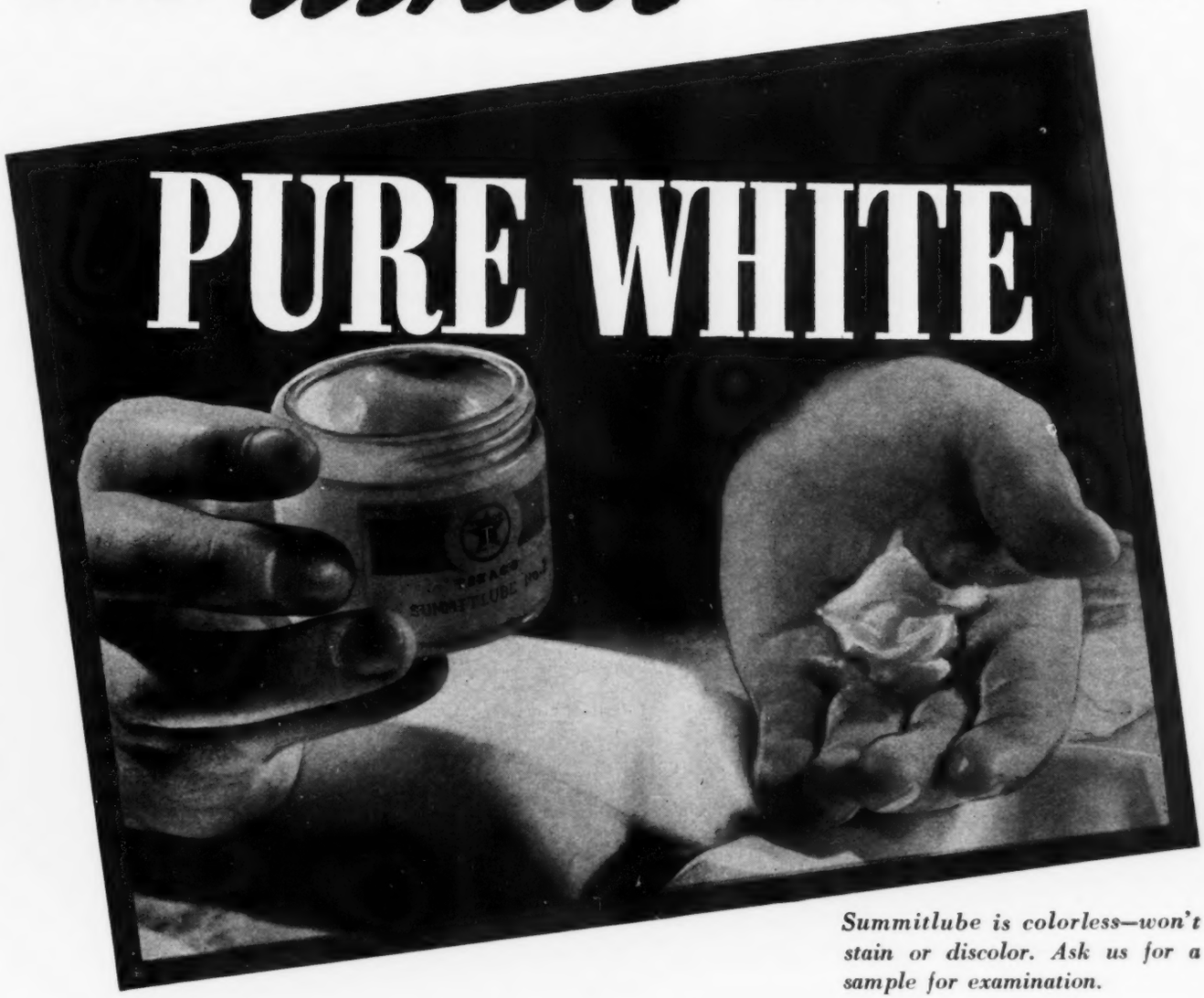
SOUTHERN AGENT: ERNEST F. CULBREATH
P. O. Box 111, Charlotte, N. C.

CANADIAN AGENT: COLWOOL ACCESSORIES, Ltd.
126 Wellington St., West, Toronto, Ont.

OF WET FINISHING EQUIPMENT

Continuous Cloth Washer ● Stainless Fulling Mill ● Cloth Washer ● Metal Piece Dye Kettles ● Rope Soapers ● Silk Dye Beck ● Bleach Tub ● Cloth Carbonizing Machine ● All Metal Pusher Mill ● Other Wet Finishing Equipment ● Stainless Metal Reels ● Wood, Rubber and Metal Rolls ● Linings, Repair Parts, Etc.

You *asked* for it...



Summitlube is colorless—won't stain or discolor. Ask us for a sample for examination.

MILL operators have wanted a white lubricant like this, for years.

It must be stainless . . . easy to wash out . . . stable . . . possess high lubricating value.

They now have it—Texaco Summitlube.

Summitlube has met with universal success for lubricating various types of textile machinery where discoloration can spoil goods or necessitate extra processing to remove it.

Used as a twister or spinning ring lubricant, the high lubricating value of Summitlube assures you of less drag—fewer ends down. Increases life of ring travelers.

A Texaco representative will be glad to provide practical engineering service to prove the economy of Texaco Summitlube.

☆ ☆ ☆

THE TEXAS COMPANY
135 East 42nd St., New York City
Nation-wide distribution facilities assure prompt delivery

TEXACO
REG. T. M.

New TEXACO *Summitlube*

KNITTING YARNS

For Men's, Women's, Children's

BATHING SUITS

OUTERWEAR, UNDERWEAR

HOSIERY

HAND KNITTING YARNS

WHITE IN OIL

TWEED COLORINGS

in an extensive range of combinations

HEATHERS AND OXFORDS

AMERICAN WOOLEN COMPANY

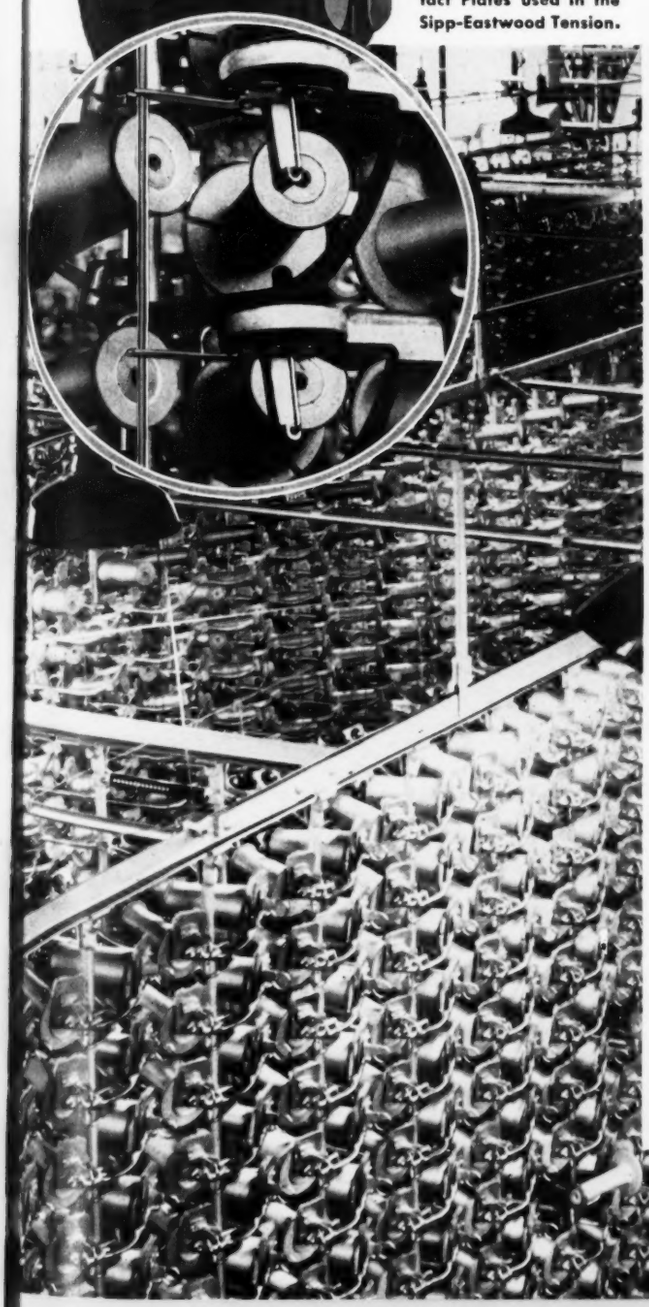
225 FOURTH AVENUE • NEW YORK

1632 SENTINELS

made of Anaconda Phosphor Bronze

on this Modern High Speed Creel

Phosphor Bronze Contact Plates used in the Sipp-Eastwood Tension.



Standing guard over quality on this high speed creel are 1632 tension units which constitute the nerve system of this sensitive textile machine built by the Sipp-Eastwood Corporation, at Paterson, New Jersey. If one of the 1632 ends should break, or tension fail for any reason, a phosphor bronze contact flashes an individual light, and immediately stops the warper. Thus quality of output on this "320 yards-a-minute" creel is constantly guarded, down-time is reduced to a minimum, and spoilage is practically unknown. Many small but important rods, bushings and stampings made of Anaconda Copper Alloys are also employed in the construction of this machine. • Throughout the Industry, Anaconda Metals are contributing to the remarkable efficiency and durability of modern textile equipment. Typical applications of these non-rust, easy-to-fabricate metals include; linings for tubes and size boxes, copper covered squeeze rolls, miscellaneous rollers, facings for rotary press beds, spirals for cloth openers, traveler rings, ducts, slasher hoods, humidifying equipment, loom and spinning equipment, bushings, bearings, spreader bars, hydro-extractor baskets, pails, dippers, electrical conduit, copper tubes for conveying size, etc.

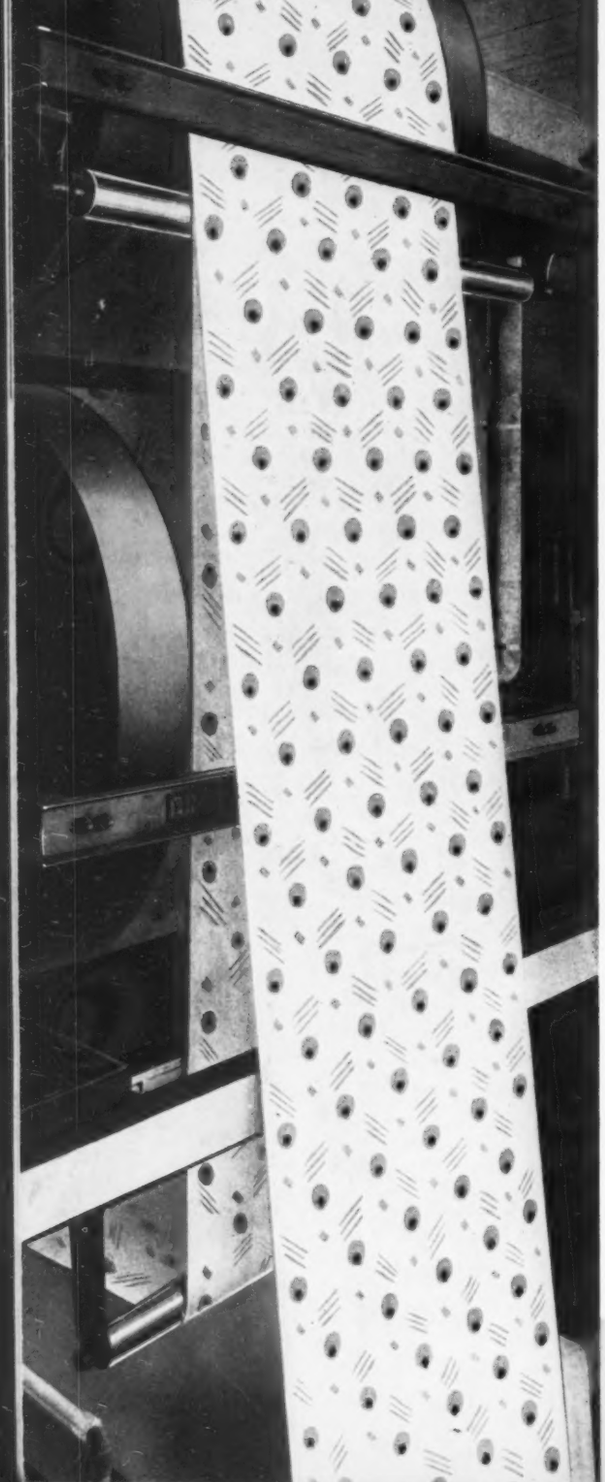
THE AMERICAN BRASS COMPANY

ANACONDA

GENERAL OFFICES: WATERBURY, CONNECTICUT
OFFICES AND AGENCIES IN PRINCIPAL CITIES

Anaconda Copper and Brass

Finer Textiles PRODUCED AND SOLD . . . AT LOWER COST

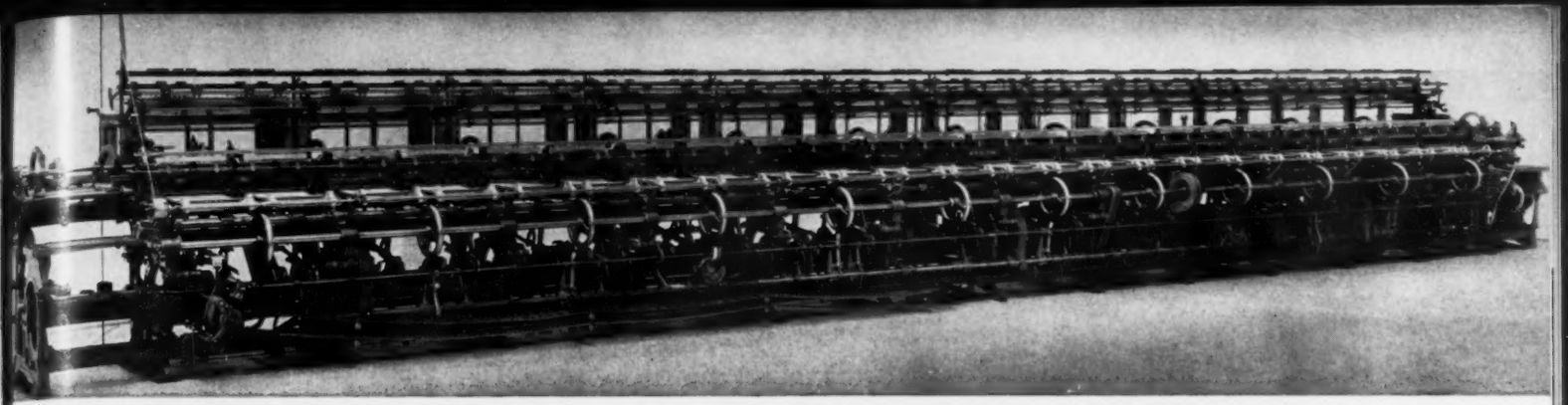


Rice, Barton and Fales Standard Eight Color Printing Machine. Printing Rollers, Color Pans, Lead Rolls and Bushings are made of non rusting Anaconda Metals.

PRINTED FABRICS

For nearly a hundred years Rice, Barton and Fales, Inc., of Worcester, Mass., have been manufacturing textile printing equipment. In all of these machines, the engraved printing rollers are made of copper. For each color there is a separate printing roller and a copper color pan, as no other metal has proved so satisfactory. Bronze bearings are used to carry the steel mandrels on which the printing rollers are mounted, and the cylindrical bodies of the drying rolls (at left) are also made of copper. Lead rolls of brass tubing carry the fabric to and from the machine, and numerous other parts are made of durable, non-rusting Anaconda Metals.

Anaconda



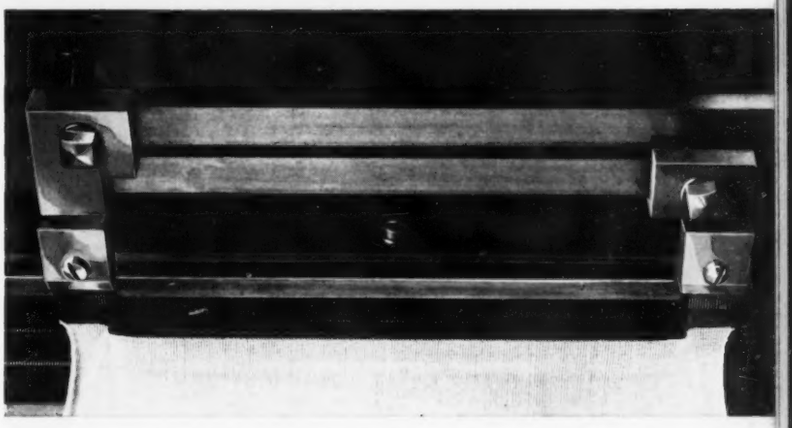
The Reading Full-Fashioned Knitting Machine and two of the many places where Anaconda Cold Drawn Brass Shapes are used

FULL-FASHIONED HOSIERY

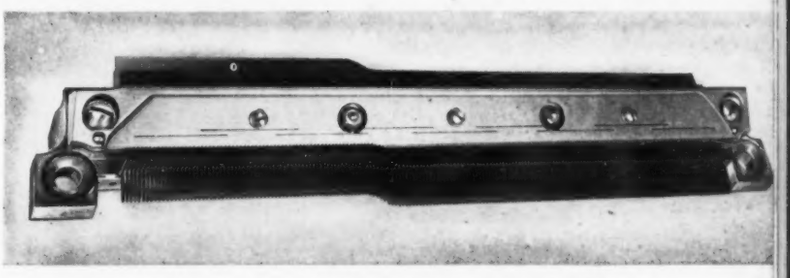
• Thirty-six years ago, practically all of the stockings manufactured in this country were of the seamless, tubular type—woven on circular looms, and naturally apt to wrinkle in wear.

• Realizing the demand for better-quality stockings at moderate price, the Textile Machine Works of Reading, Pa., designed and built, at about that time, the first American-made full-fashioned knitting machine. So successful was this first machine in producing quality hosiery on a quantity basis, and so well have subsequent models been developed and marketed, that a majority of all women's stockings manufactured in America today are produced on Reading Full-Fashioned Knitting Machines.

• The illustration above shows a modern Reading Machine, composed of 24 sections, on which a corresponding number of individual stocking blanks are knit simultaneously. The illustrations at the right show two of the several parts (in each section) where cold-drawn brass shapes are used to promote smooth knitting action and long life, with a minimum of friction and wear.



Narrowing Combs of Anaconda Cold Drawn Brass Shapes



Anaconda Brass Verge Plate in Sinker-Head Assembly

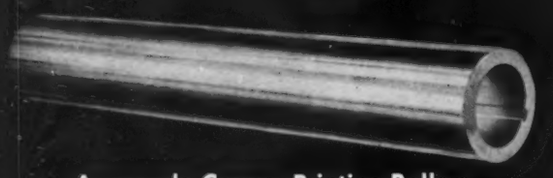
ANACONDA CORROSION-RESISTANT METALS

Anaconda Metals for the Textile Industry include Copper, Brass, Bronze, Everdur, Ambrac, and other Special Copper Alloys in the forms of sheets, wire, rods, tubes, extruded shapes, and hot-pressed parts. Also many special products such as printing rollers, dry cans, welding rods, pipe, fittings, etc., several of which are described in detail on the next page.

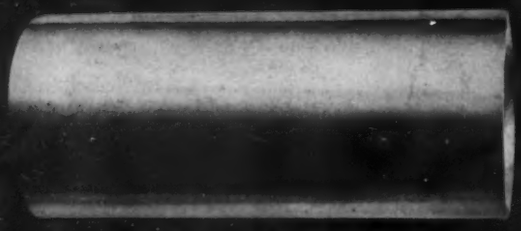
ENGINEERING COOPERATION

Anaconda Engineers and Metallurgists are always glad to cooperate in the solution of any manufacturing or construction problem where choice of materials is an important consideration.

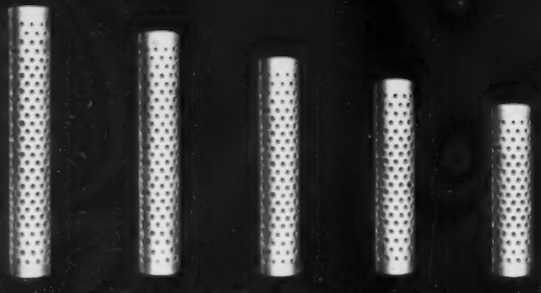
SPECIAL ANACONDA PRODUCTS *for the* TEXTILE INDUSTRY



Anaconda Copper Printing Rollers



Seamless Copper Tubes for Dry Cans



Perforated Ambrac Tubes for Dyeing Equipment

Welded Everdur Tank for Dye Process Work

ANACONDA COPPER PRINTING ROLLERS

These rollers are accurate in dimensions, uniform in hardness, and meet all requirements of machinability, burnishing, pantographing and etching. They are particularly free from porosity and possess excellent wearing qualities. Available in all standard bores.

ANACONDA SEAMLESS COPPER TUBES FOR DRY CANS

Accurate in dimensions, uniform in temper, smooth of surface, round and straight. Being cold-drawn through dies, these Seamless Tubes possess high strength and rigidity—Furnished either plain or tinned as required up to 26″ O.D.

AMBRAC METAL*

A high-strength alloy which resists the corrosive action of both acids and alkalis alike. Composed principally of copper and nickel, Ambrac is not refractory, but can be bent, stamped, spun, forged, drawn and cast almost as easily as brass. Available in sheets, wire, rods, tubes, casting ingots.

EVERDUR METAL*

Composed principally of copper, this remarkable alloy combines high strength with excellent resistance to a wide range of corroding agents used in the textile industry. It is easily welded by all commonly used methods. Leading manufacturers can furnish tanks, vats, kettles, buckets, dippers, extractor baskets, bleaching and dyeing equipment, kiers, valves, fittings, linings, etc., made of Everdur Metal.

ANACONDA SEAMLESS BRASS PIPE AND COPPER TUBES

Anaconda Seamless Brass Pipe for use with threaded fittings is made in two alloys—67* Yellow Brass Pipe for use under normally corrosive conditions, and 85* Red Brass Pipe, the most durable brass pipe produced commercially. Anaconda Deoxidized Copper Tubes are used extensively for plumbing and carrying lines. Anaconda Fittings for assembling the tubes, are furnished in both solder and flared tube types.

*Trade Mark Reg. U. S. Pat. Off.

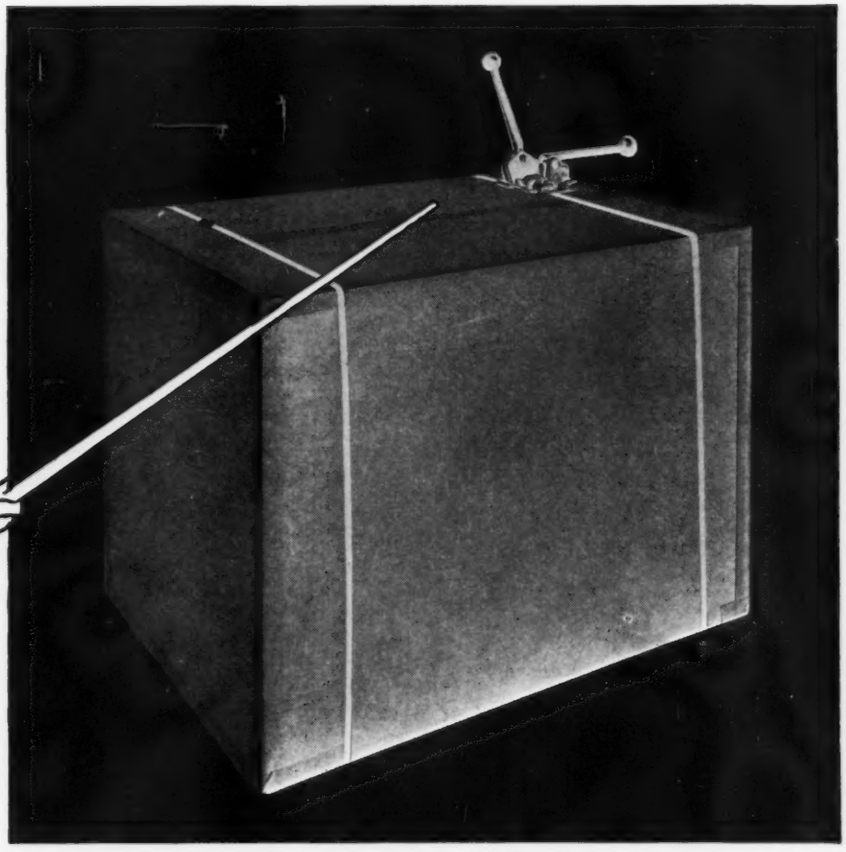
THE AMERICAN BRASS COMPANY

ANACONDA
From mine to consumer

GENERAL OFFICES: WATERBURY, CONNECTICUT
OFFICES AND AGENCIES IN PRINCIPAL CITIES

Anaconda Copper and Brass

"...then Acme Steelstrap was applied here, thus reducing costs and increasing profits"



"The treatment is simple. *Better* packaging is accomplished in shorter time, at lower cost.

Many Branches of the Textile Industry have used Acme Steelstrap and Bale Ties exclusively for years. Bales, wooden and corrugated boxes are stronger, more compact and 'bound to get there' when Acme Steelstrap and Bale Ties are used.

My *Second* Strap Book is helping many companies effect important economies. Mail the coupon, today, for your FREE copy."

Doc. *Steelstrap*

ACME STEEL COMPANY

GENERAL OFFICES: 2838 Archer Avenue, Chicago, Illinois

Branches and Sales Offices in Principal Cities

Acme Steel Company, 2838 Archer Ave., Chicago, Ill.

☐ Please send me a copy of "My Second Strap Book."

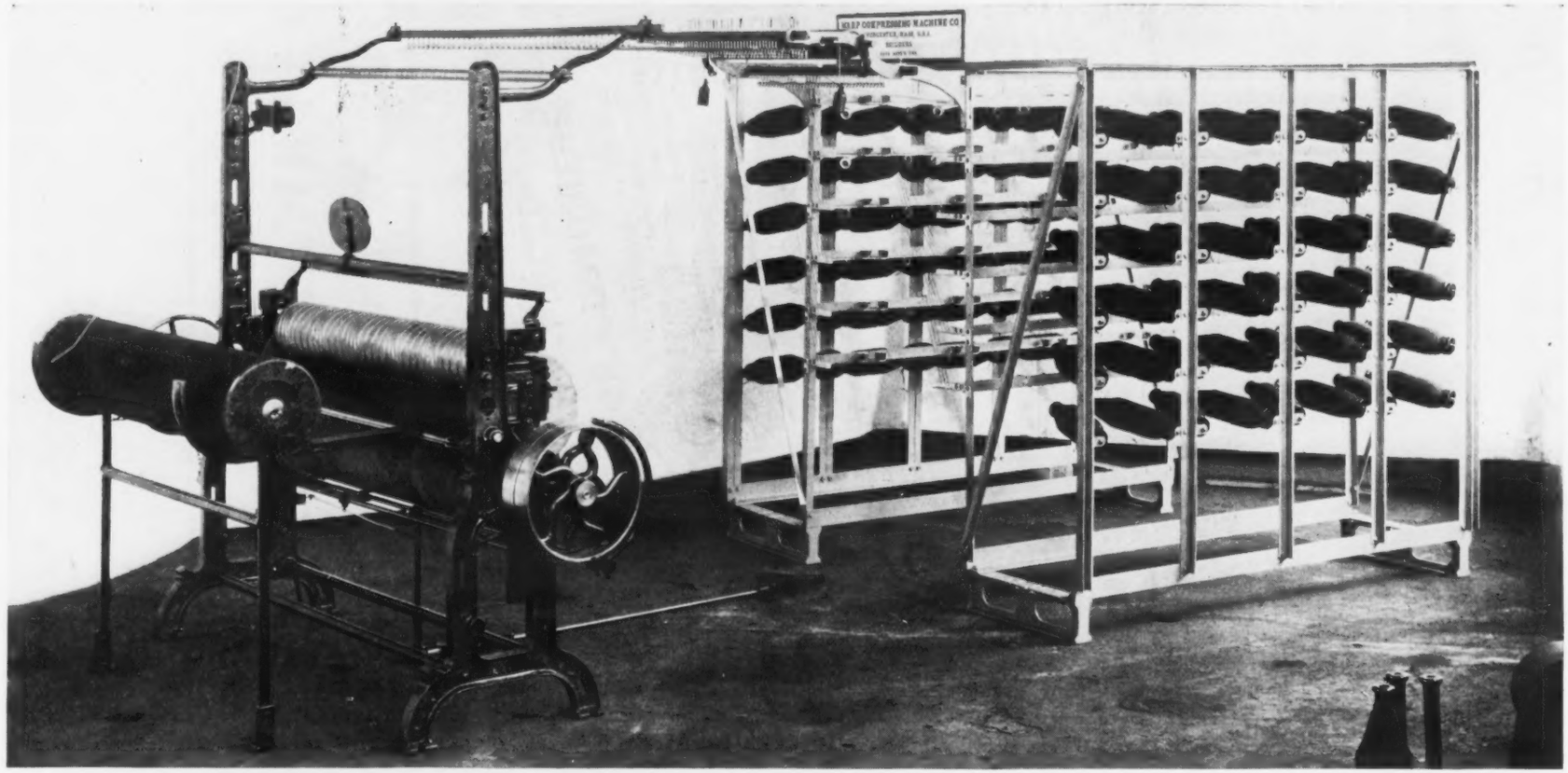
☐ Without any obligation, please have Doc. Steelstrap diagnose our case.

Name _____

Position _____

Firm _____

Address _____



HIGH SPEED JACK SPOOLING for woolen yarns

RING SPINNING BOBBINS and CONES

HI-SPEED COMPRESSING SPOOLER CREEL Model M, HS
V-grooved steel compressing roll; quick cross-wind • Electric stop-motion for broken or lost ends • Electric pre-determining yardage Counter • DOFFING RACK at back of Spooler, Capacity, two full spools; no lifting by girl • Spool head capacity 12" • Working space is between Spooler and Creel • Can be equipped with variable-speed transmission • Yarn speed 100 to 500 yards per minute.

OVER END DELIVERY MAGAZINE SPOOLER CREEL
Using spinning-frame bobbins and cones • Tension roll • Electric stop-motion for broken or lost ends • Tensions, double-cup model • Spindles revolving type, operator can spin bobbin until "tail" is located • No interference between the two bobbins in tying over • Pig-tail guides with porcelain seats on top stick.

WARP COMPRESSING MACHINE CO • Builders • Worcester, Mass.

5 DIFFERENT SAVINGS WITH ONE MACHINE

Because the stock does not have to be poled or agitated in any way during the dyeing operation and because it can be unloaded quickly and transferred to the squeeze rolls in cheese form on a false bottom, the Franklin Process Raw Stock Dyeing Machine makes important reductions in labor cost.

Because it dyes in a closed kier with a short dyebath it also makes an appreciable saving in steam and dyestuffs.

Ignore these savings entirely and still you cannot ignore the machine, because of another saving which is the most important of all. We refer to the fact that because the machine leaves the stock in such superior condition, it makes possible a better fabric quality than before with the same grade of stock, or the same fabric quality as before with a lower grade of stock. One way you can command a better price. The other way you save on raw materials.

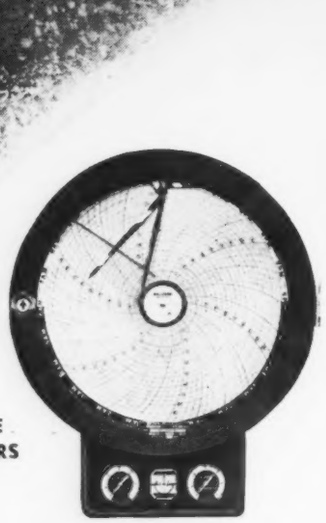
The Franklin Process Raw Stock Dyeing Machine also offers other advantages, such as elimination of dye house fog with resulting savings in labor and building maintenance. Our line now includes stainless metal models — aluminum, stainless steel or monel metal.

Complete details and recommendations on request.

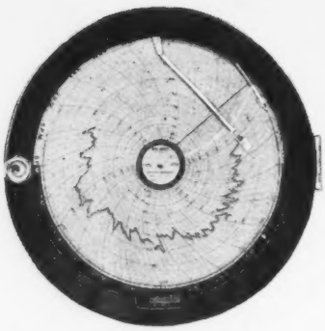
FRANKLIN PROCESS COMPANY
PROVIDENCE • RHODE ISLAND

FRANKLIN PROCESS RAW STOCK DYEING MACHINE
Better Fabric Quality with Same Grade of Stock or Same Fabric Quality with Lower Grade of Stock

Use Modern Instruments for

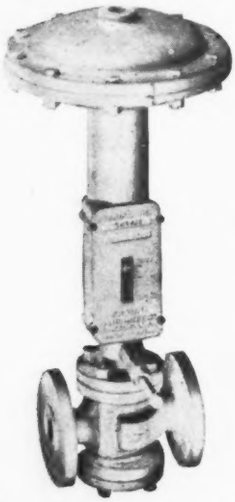


AIR-O-LINE CONTROLLERS

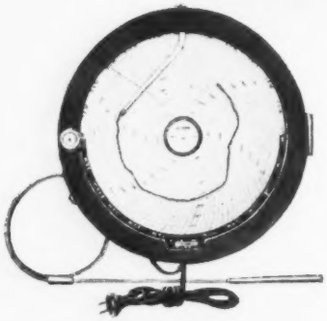


RECORDING FLOW METER

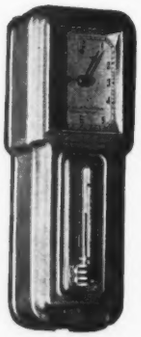
TEMPERATURE CONTROLLERS



AIR-O-MOTOR VALVES

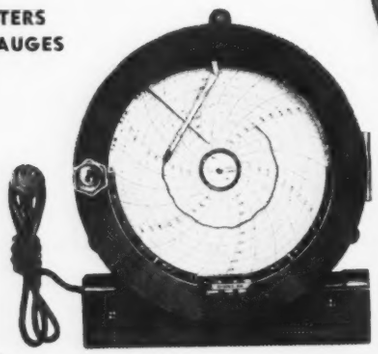


THERMOMETERS PRESSURE GAUGES



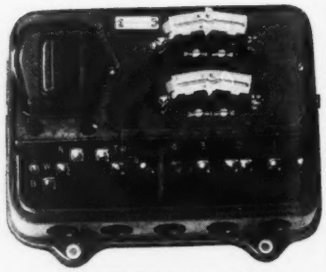
CHRONOTHERM THERMOSTAT

MOTORIZED GLOBE VALVES



HUMIDITY RECORDER

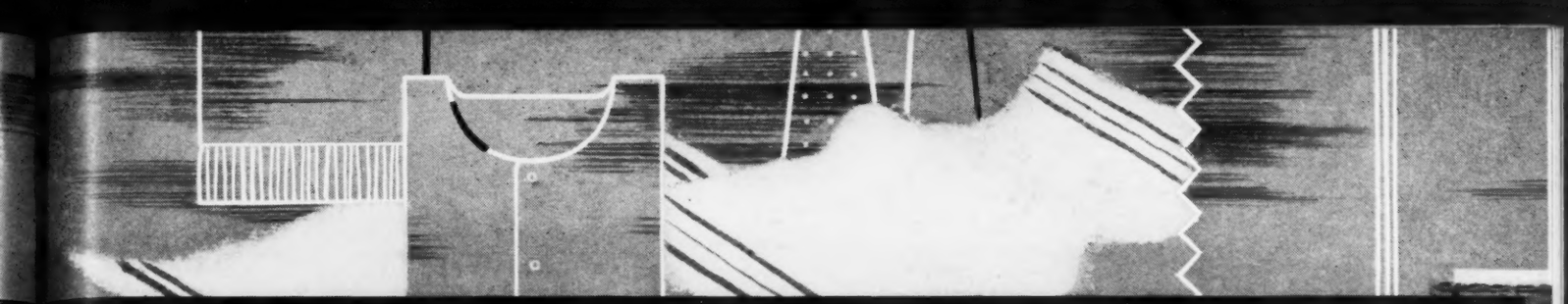
HUMIDITY CONTROLLER



PROPORTIONING RELAY

BROWN INSTRUMENTS RECORDING INDICATING CONTROLLING

To Measure and



Modern Textile Methods

WITH modern competition constantly demanding more precise manufacturing methods in textile processes progressive companies have found there is no more effective way to increase efficiency, eliminate rejects and improve quality than to modernize instrument equipment.

Production costs go down when you have accurate chart records and control of temperatures, pressures, flows, liquid levels, humidity and other variables that affect quality and production costs.

Brown Instruments and Minneapolis-Honeywell controls bear this responsibility in a constantly increasing number of textile plants. Where they are installed, increased efficiency, improved quality and lower costs quickly follow.

Brown Instruments and Minneapolis-Honeywell controls are designed to work singly or in complete coordination with each other for the measurement of a single factor or complete control of an entire textile process.

When you look for instruments best suited for modern textile methods, call in a Brown engineer who knows your work and is backed by an organization combining 125 years of experience in pioneering and perfecting industrial measuring and automatic control equipment. There is no obligation. Write The Brown Instrument Company, *a division of Minneapolis-Honeywell Regulator* Co., 4509 Wayne Avenue, Philadelphia, Pa. Offices in all principal cities. Canadian Factory: 117 Peter St., Toronto, Canada. European address: Minneapolis-Honeywell Co., Wijdesteeg 4, Amsterdam-C, Holland.

MINNEAPOLIS-HONEYWELL Control Systems

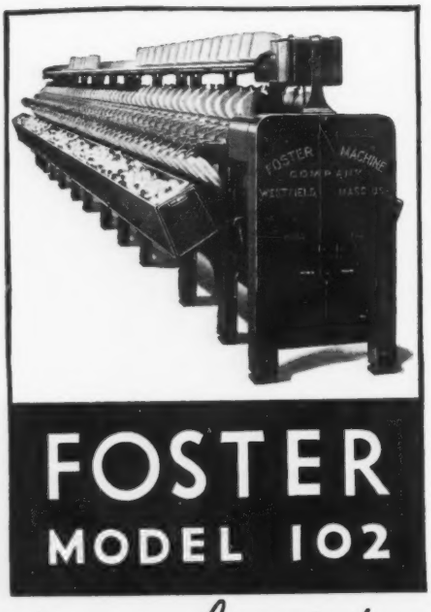
Control is to Economize

Says a LARGE COTTON YARN CONVERTER

Spinners prefer Foster cone winders because of their economical operation and because Foster Winding breaks down sales resistance.

Knitters prefer Foster cotton cones because their UNIFORM DENSITY and precise wind assure uniform and economical knitting.

The new Model 102 Foster winder still further improves Foster economy and Foster quality. It increases production 100% and reduces labor cost 1/3 as compared with older machines. The drum wind makes possible a uniform yarn speed. This uniform speed, assisted by proper tension and pressure devices, makes possible a controlled density most suitable for knitting requirements.

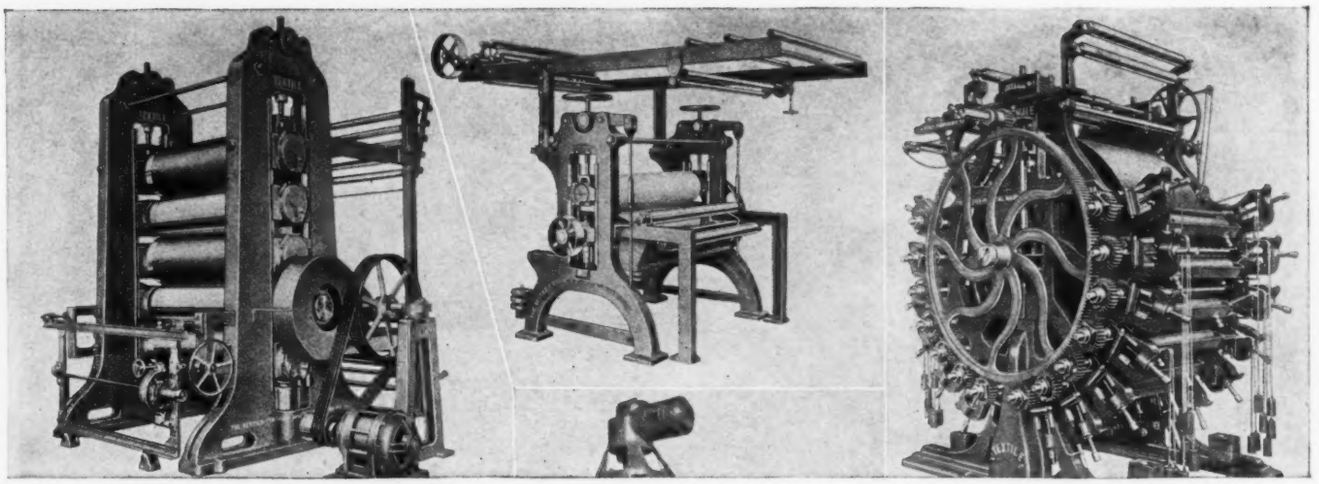


FOSTER
MODEL 102

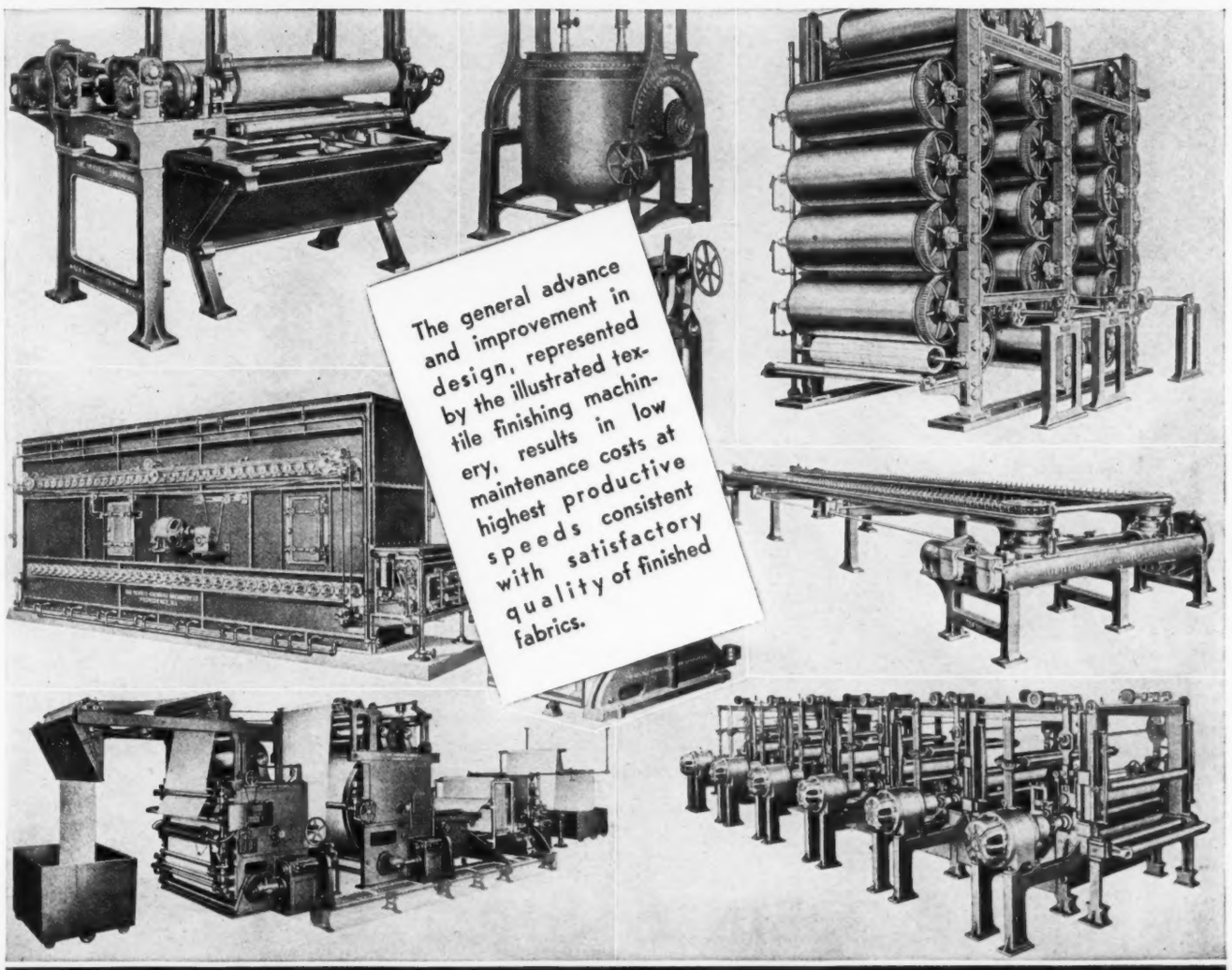
YOUR REPUTATION!
Winding Makes It or Breaks It.

FOSTER MACHINE
COMPANY
WESTFIELD, MASS.

Standard for the Knitting Trade



Advanced Design in Finishing Machinery



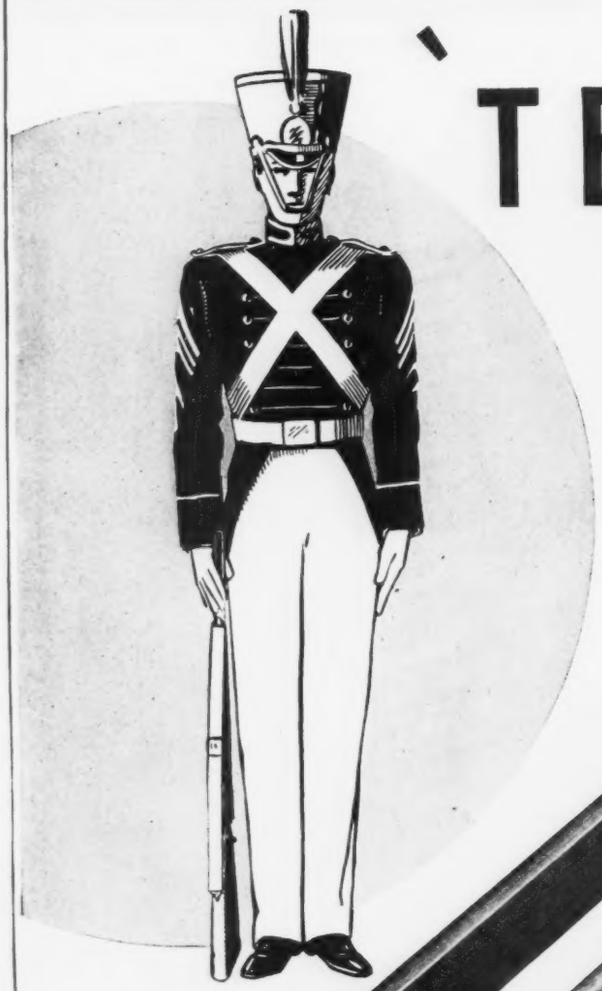
The general advance and improvement in design, represented by the illustrated textile finishing machinery, results in low maintenance costs at highest productive speeds consistent with satisfactory quality of finished fabrics.

The Textile-Finishing Machinery Co.

New York Office
50 Church St.

Southern Office
Johnston Bldg., Charlotte, N. C.

Providence, R. I.



`TENSION´

U S Worsted Tension Shuttle * gives POSITIVE TENSION on The First Pick!

EXHAUSTIVE tests in our own plant — sample orders from mills and then repeat orders — that is the story of what has happened to our new worsted shuttle and the tension eye which is revolutionizing the worsted trade!

Fitted with the latest U S die-cast eye which is positive threading and equipped with the latest tension, the New U S Worsted Tension Shuttle gives *positive tension on the first pick* and *every pick* in bobbin changing looms. This positive action eliminates loose or tight picks. The eye mechanism is adjustable to practically any degree of tension desired.

Let us demonstrate the New Worsted Tension Shuttle in your mill.
Your request for samples will receive immediate consideration.

*Patent No. 1378837

U S BOBBIN & SHUTTLE CO.

Lawrence, Massachusetts

Offices: Providence, R. I., Manchester, N. H., Philadelphia, Pa., Goffstown, N. H., Monticello, Ga., Charlotte, N. C., Greenville, S. C., Johnson City, Tenn.
Chicago Agent: Albert R. Breen, 80 E. Jackson Blvd.

BETTER BOBBINS • SPOOLS • CONES • SHUTTLES

"LOOKS LIKE TUFFER CARD CLOTHING LASTS FOREVER,"

says a Card Room Foreman

Recently one of his cylinders had been smashed from something which couldn't be carded dropping into the machine. When he took off the cylinder, he found it had been on for thirteen years. "Gosh!" he said, "From the looks of it, I really think it was good for ten years more. Now I'll use it for a doffer."

And so another Tuffer Card does double duty and proves its worth. It isn't the first cost, you see. Quality is remembered long after price is forgotten.

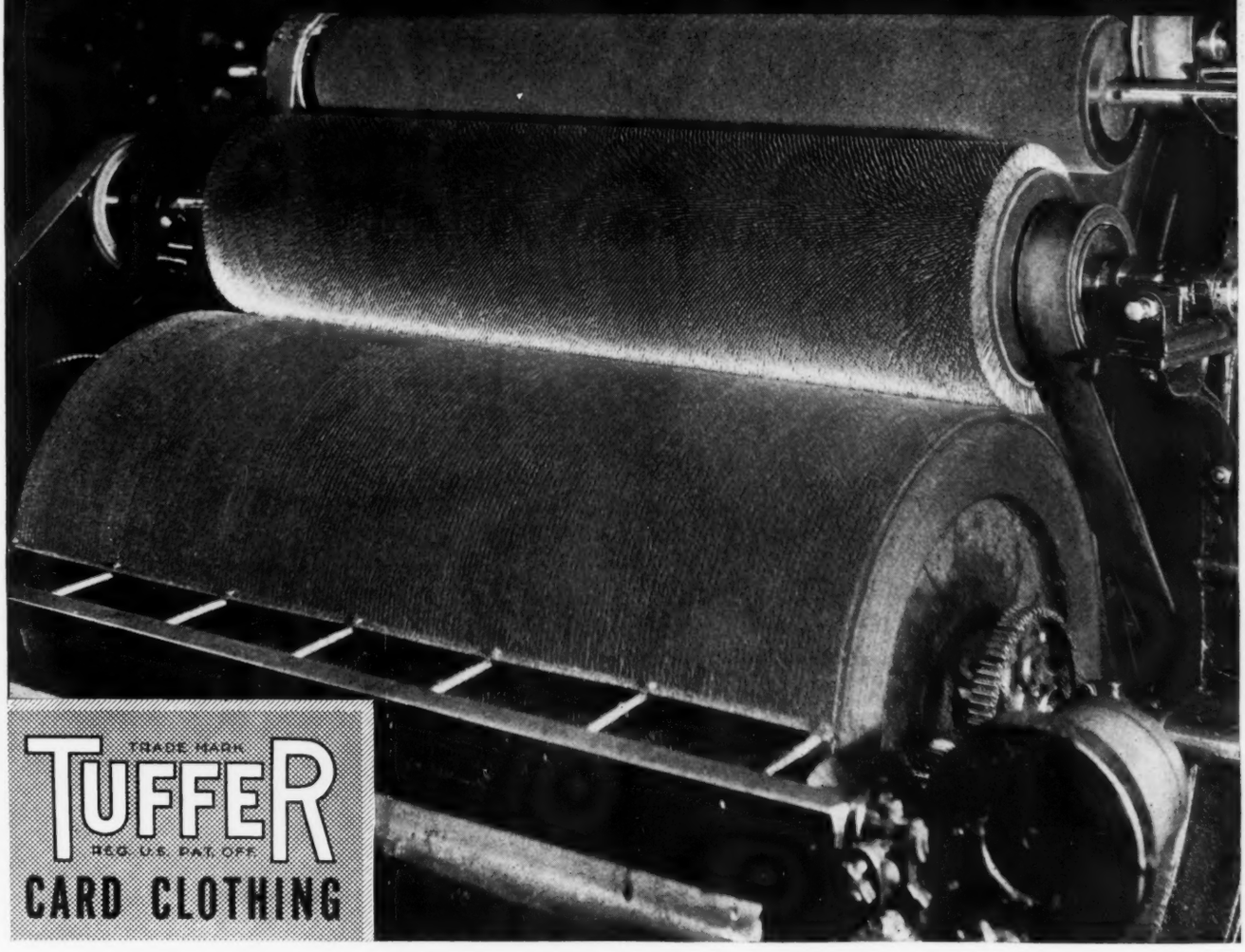
Feel free to write at any time for practical card room suggestions to solve your problems.

HOWARD BROS. MFG. CO.

HOME OFFICE AND FACTORY: WORCESTER, MASS.

Southern Plant: 244 Forsythe St., Atlanta **Branch Offices:** Philadelphia, Dallas

Products: Card Clothing for Woolen, Worsted, Cotton, Asbestos, and Silk Cards — Napper Clothing, Brush Clothing, Strickles, Emery Fillets, Top Flats Recovered and extra sets loaned at all plants — Lickerins and Garnett Cylinders from 4 to 30 inches and Metallic Card Breasts Rewired at Southern Plant — Midgley Patented Hand Stripping Cards, Howard's Special Hand Stripping Cards and Inserted Eye and Regular Wire Heddles



TRADE MARK
TUFFER
REG. U.S. PAT. OFF.
CARD CLOTHING

Just in case you are not a practical woolen mill man we give below the advantages of the mule spinning principle in general:—

1. This principle lends itself exceptionally well to the requirements of wool spinning which entails only ONE drawing process and therefore affords no opportunity to correct imperfections later on. It permits a free and natural distribution of the fibres and allows the twist to enter the thin places in the yarn first (thus preserving strength, elasticity and evenness). It also leaves the short fibres on the outside of the yarn undisturbed (thus again preserving strength and the essential lofty character of the yarn).

2. Mule spinning permits exceptionally accurate control of yarn size and also makes possible piecing so perfect that it can not be distinguished in the finished product.

3. Flexibility. It can successfully spin even the poorest shoddy and is economical on short runs as well as long runs, because changeovers are easily and quickly made.

4. More spindles per operative. With the GIANT Package Mule it is practical in many cases for one operative to run 384 spindles.

5. Lower carding cost (as much as 15% in some cases) because the mule will handle a coarser roving than other types of machines.

6. Less floor space in many cases on the basis of A GIVEN PRODUCTION.

So much for mule spinning in general. Now consider the advantages of GIANT Package Mule Spinning in particular.

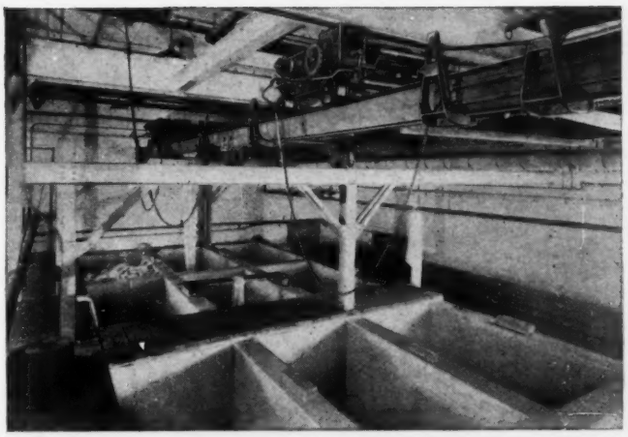
1. This system, because it requires less doffing, has increased spinning production over the old type mule as much as 69%.

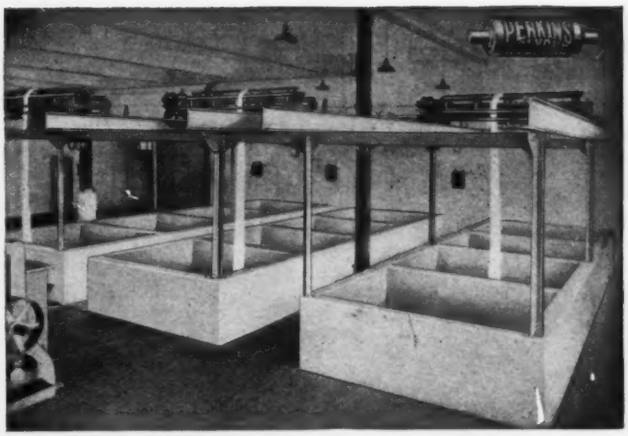
2. On the same job it has reduced spooling time 54.5% and number of knots 30% (which automatically reduces burling time and improves the quality of the fabric).

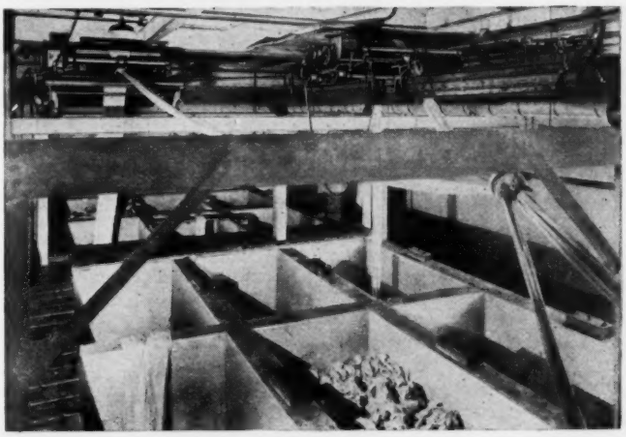
Space available does not permit detailed figures here, but they will be gladly furnished on request.

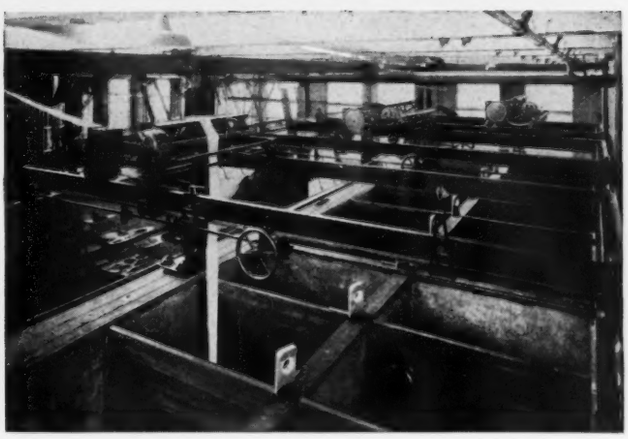
JOHNSON & BASSETT, INC., WORCESTER, MASS.

Canadian Representative: W. J. WESTAWAY CO., Ltd., Hamilton, Ont.









PERKINS BIN PILERS. These automatic machines eliminate hand labor and losses due to soilage, and snarling or knotting. They pay for themselves in less than two years.

Typical Perkins Bin Piler Installations:—

Appleton Company.
The Apponaug Co.
Arkwright Corporation.
Arnold Print Works.
The Aspinook Co.
Bellman Brook Bleachery.
Cannon Mills Co.
Chicopee Manufacturing Corp.
Clearwater Manufacturing Co.
Columbia Mills, Inc.
Cranston Print Works Co.
Dan River Cotton Mills.
Danvers Bleachery.
Delta Finishing Co., Inc.
Dodgesville Finishing Co.
Dutchess Bleachery, Inc.
East Lyme Bleachery
Erwin Cotton Mills Co.
Fall River Bleachery.
Glenlyon Print Works.
The Hampton Co.
Johnson & Johnson, Inc.
Kerr Bl. & Fin. Works, Inc.
Lewiston Bl. & Dye Works.
Lincoln Bl. & Dye Works.
Liondale Bl., Dye & Pr. Wks.
Millville Mfg. Co.
Montreal Cottons, Ltd.
Morgan & Hamilton.
Mt. Hope Finishing Co.
Nashua Mfg. Co.
North Carolina Finishing Co.
Pacific Mills (Lawrence, Mass.)
Pacific Mills (Lyman, S. C.)
Pontiac Bleachery.
Providence, Dy., Bl. & Cal. Co.
Proximity Mfg. Co.
Queen Dyeing Co.
Rock Hill Print. & Fin. Co.
Rockland Finishing Co.
Rosemary Manufacturing Co.
Salyes Biltmore Bleacheries.
S. Slater & Sons, Inc.
Slatersville Finishing Co.
Standard Bleachery Co.
Stevens Linen Works.
The Sterilek Co., Inc.
Thomaston Bleachery.
Union Bleachery.
United States Finishing Co.
Utica Willowvale Bleaching Co.
Waldrich Bleachery.
Western Shade Cloth Co.
Wilkes-Barre Lace Mfg. Co.

B. F. Perkins & Son, Inc., Holyoke, Mass.

"Let's Plan for Permanent Prosperity!"

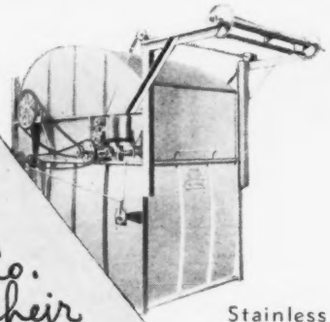
MEMO for 1937

To – Mill Superintendent

Better check machinery needs at once. Suggest you consult with Rodney Hunt Machinery Co. for all wet finishing needs. Their new stainless construction is guarantee of permanence – fits well into national program of permanent prosperity

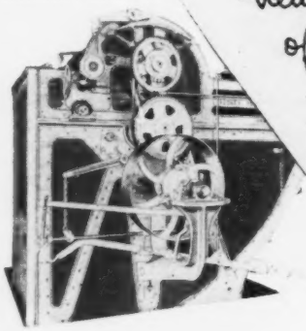
J. D.

Executive Office



Stainless "TRUSHADE" Machines

"EXPRESS" FULLING MILLS Stainless Features



And Rolls, too, of stainless,— built to last forever.

RIGHT! The Rodney Hunt Machine Company welcomes consultation on all wet-finishing machinery problems—as well as replacements of rolls and reels.

Pioneering in the American field, this company has led for a century in the production of new designs, new construction, and new materials. With engineering and manufacturing facilities second to none, Rodney Hunt is prepared to continue in 1937 its efficient service to the textile industry.

Patented "Shaf-tite" protection in all Rodney Hunt rolls—of wood, rubber or metal.

RODNEY HUNT

Rodney Hunt Machine Co., 35 Mill Street, Orange, Mass., U. S. A.

Greater Efficiency Per Loom *plus* More Production

WEST POINT LOOM BEAMS make possible continuous and quality production in the weave room, and the elimination of bad selvage! Here's why:

These Beams run true! The heads are equidistant at all points! Therefore, an even amount of yarn winds on the beams at all sides! *Thus no high and low places at the edge of the warp, and consequent bad selvage!*

There is the proper thickness of material at what would otherwise be weak points. The pockets are machined inside so the bearings fit *snugly*. The heads and inside of pockets are finished with two coats of paint and thick white lead to prevent rust and moisture collecting and running down on them. *This avoids rust on the yarn!*

WEST POINT BEAM BARRELS are made of suitable wood. The wood is thoroughly seasoned, air dried, then kiln dried to a proper moisture content. They will not warp.

The journals are made of a special tough plow steel. *This increases their life at least 50%.* They are machined absolutely true and straight, and the heads are bored so the journals fit into them tightly *and stay put!* Before shipment all beams are assembled in our plant and heads checked for trueness!

These are important factors in West Point Loom Beams which make them so efficient. A trial of these loom beams will demonstrate how they can actually improve and increase your production without added cost.

• Also manufacturers of special machinery, cloth room machinery, textile machinery repair parts and gears.

WEST POINT FOUNDRY & MACHINE CO.

(Batson-Cook Company, Owners)
WEST POINT, GEORGIA

A *New* COMPLETE LINE OF LARGE PACKAGE TWISTERS

FOR COTTON, WOOL, SILK AND RAYON

No matter what the fibre, the count or the construction of your ply yarns we now have a twister that will meet your requirements.

These machines are designed to make large packages and therefore offer the advantages that go with this type of machine; increased production and lower twisting cost due to fewer doffs and lower costs in subsequent operations because of the large package, less knots, and the possible elimination of rewinding. What is your twisting problem?

Let us make recommendations

H & B AMERICAN MACHINE COMPANY
COTTON PREPARATORY AND SPINNING MACHINERY
PAWTUCKET, RHODE ISLAND

BOSTON OFFICE . . . . . 161 Devonshire Street
ATLANTA OFFICE . . . . . 815 Citizens & Southern National Bank Building
CHARLOTTE OFFICE . . . . . 1201-3 Johnston Building

• FEATURES •

1. Increase in ring diameter up to 50 percent or more.
2. Old spindle speeds maintained or increased.
3. Traverse increased as much as 5 inches over old standards.
4. Spindles designed for high speeds and heavy loads.
5. Pull of yarn from creel is free and unobstructed.
6. Gearing permits a wide range of twist.
7. New design tension device allows proper tension on tape, so as to insure steady spindle speed without undue strain on the spindle bolster.
8. Frames are sturdily built and properly balanced throughout to minimize vibration.

"Develop and Improve—to Progress"

BIRCH BROTHERS, INC.

SOMERVILLE, MASS.

Established 1883

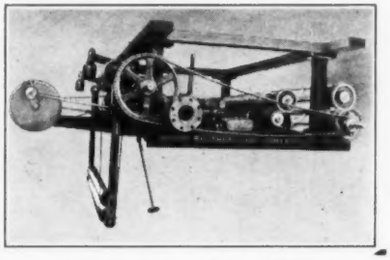
HAROLD W. BIRCH
CLIFFORD W. BIRCH
STANLEY W. BIRCH

Southern Representative
JOHN C. COSBY
Greenville, S. C.

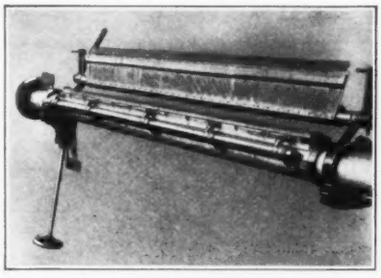
Builders of

NEW AND IMPROVED
DYEING AND FINISHING MACHINERY *for* Woolens, Worsteds, Cottons, Rayons, Silks and Pile Fabrics *also* MILL SEWING MACHINES

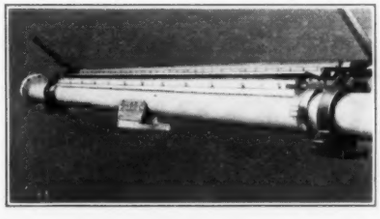
WELL BUILT MACHINES of MODERN DESIGN



New Heavy Duty All Ball Bearing Cloth Opening and Folding Machine fitted with adjustable slot vacuum box and seal. All drives by cut gears or roller chain. Drive by built-in Motor, when desired.



Re-enforced Adjustable Slot Vacuum Box with hand wheel adjustment (patent pending) with patent vacuum slot seal.

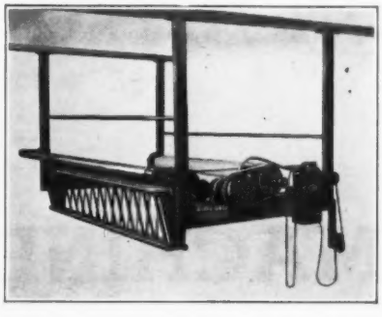


Re-enforced Vacuum Extracting Box, center or end outlet. Patent slot seal in operating position.

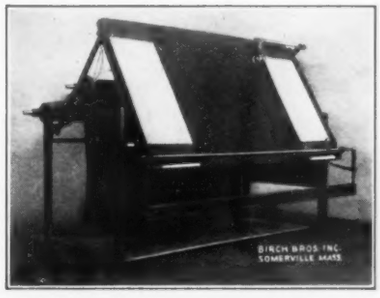
Made to Fit Your Needs

Products

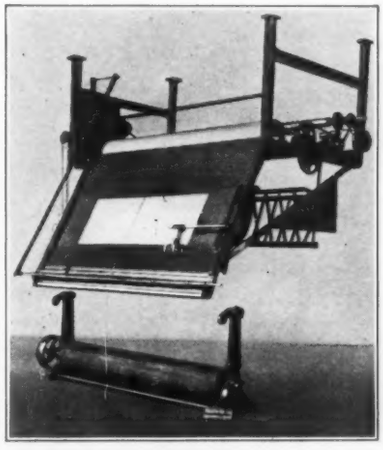
Ball Bearing Scutchers
Improved Open Soapers
Cloth Batchers
Mangles
Cloth Inspecting Machines
Cloth Stretchers
Crabbing Machines
Dye Kettles
Rubber Expanders
Folders
Open Width Scouring Machines
Dye Jigs
Washing Machines
Vacuum Extractors, etc.



Weave Room Power Perch, forward, reverse and variable speed drive; hand control and yardage counter.



Birch Power Burling Table (patent pending) with glass panel for through lighting, forward and reverse motor drive. Saves 25 to 50 per cent of cost of burling on Woolens and worsteds.



Improved Power Perch for finished goods, through lighting, yardage counter, forward, reverse and variable speed motor drive.

BASE YOUR DECISION ON *performance*

When contemplating a change of your present Roving or Spinning Frames, or the addition of new Frames, consider performance before making a decision on which system you will purchase.

Roving and Spinning Frames equipped by Whitin for better drafting will produce consistently more even roving, stronger and more even and smoother yarns, with less ends down, less waste, and at a lower unit cost for cleaning.

Every mill test we have made during the period of greatest demand for such equipment since long draft was developed has borne out this statement.

It is pleasing to us to know that we have not lost a single order based on tests made between competing systems, so far as we can determine, over the last year and a half.

You are safe in basing your final decision on the performance record of the Whitin-Casablancas Systems, for Roving and Spinning Frames.

BUY ON *performance*

WHITIN MACHINE WORKS

CHARLOTTE, N. C. WHITINSVILLE, MASS. ATLANTA, GA.

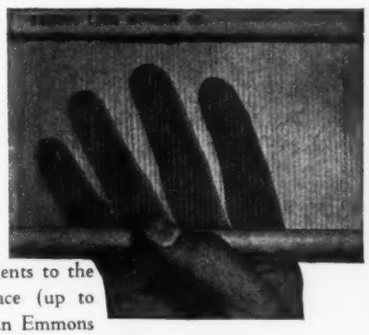
EMMONS

LOOM EQUIPMENT FOR BETTER WEAVING

Certified STEEL HEDDLES manufactured
by a process insuring smoothness of eye, long wear,
high tensile strength, durability and corrosion resistance
of plating. Heddles purchased in open market are
examined and tested periodically by
PITTSBURGH TESTING LABORATORY
as an independent check upon harmony standards of
manufacturing control
EMMONS LOOM HARNESS COMPANY
LAWRENCE, MASSACHUSETTS

"CERTIFIED" STEEL HEDDLES

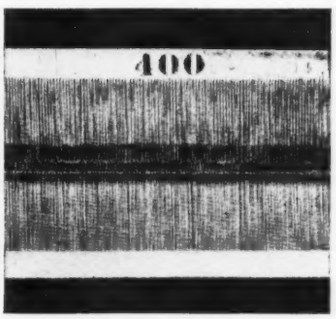
Eliminate chafing of warp ends, improve the finish. An outside laboratory regularly tests Emmons heddles for smoothness of heddle eye, long-wearing quality, high tensile strength, durability and corrosion resistance of plating. See the "certified" tag on every shipment of heddles. All standard sizes and types (except Doupes). Samples on request.



"MULTIPLIED YARN SPACE" REEDS

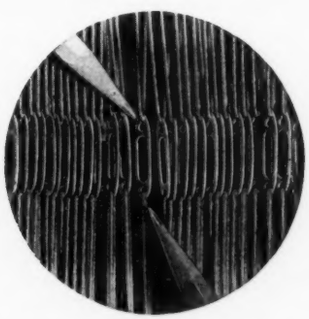
(metal and pitchband)

Compared with other reeds having the same number of dents to the inch, there is more yarn space (up to 65%) between the dents of an Emmons Reed—with no less rigidity. Wider avenues mean fewer loom stops, fewer rejects resulting from cut or roughed yarn. Quick delivery—telephone or telegraph collect.



"CHAFELESS CORD" COTTON HARNESS

Used by more mills than any other cotton harness. Its glass-like varnish surface prevents cuts and chafing, results in higher loom production and improved cover. 5 coats of varnish, 48-hour baking, humidity-proof dressing mean longer life. It costs no more. Send specifications. Rapid service—wire or phone collect.

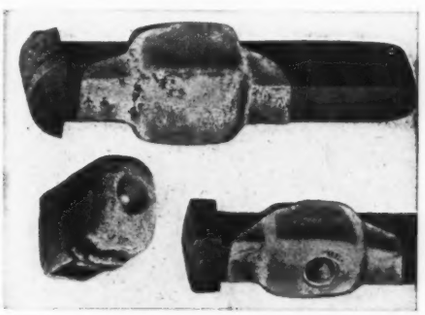


MAIL EYE HARNESS

Light as cotton—strong as steel. Combined advantages of cotton harness and stream-lined eye. For heavier weaves and coarse yarn. Can be used with drawing-in machine. Samples on request.

SELVAGE HARNESS

Can be made either as cotton or mail eye harness. Long staple yarn with high breaking strength. Mail eyes recommended for severe service. Quickly attached. Insures proper position of end guides. Up to 24-inch depth.



LOOP AND DOLL PICKERS

No rivets to spoil the shuttle point. A complete assortment of Wardwell Loop and Doll Pickers, all tape or rawhide face, on hand at all time, ready to ship.

OTHER EMMONS PRODUCTS

Jacquard Heddles	Mending Eyes and Twine	Beamer and Dresser Hecks
Heddle Frames	Warp and Lease Reeds	Slasher and Striking Combs

EMMONS LOOM HARNESS CO.

LAWRENCE, MASS.

SALES REPRESENTATIVES: William C. Nairn, Roslindale, Mass., H. Wilbur Emmons, Salem, N. H., George F. Bahan, Charlotte, N. C., Herbert Booth, Birmingham, Alabama.

6 to 12 Cut Loads in one-third less time

THESE facts show why Hunter Stainless Steel Fulling Mills can save on wet finishing costs. Of course they reduce dead loss. Smooth polished surfaces cut flocking. More weight is delivered in cloth. Less goes down the drain. Stainless Steel linings, guides, stop motion, crimping boxes and sectional rubber rolls eliminate practically all ordinary repairs plus lost production time due to breakdowns. In addition Hunter Stainless Steel Mills give you twice to four times the capacity. Uniformity is greatly improved and production increased — often to the point where twice the load is delivered in two-thirds or even half the time . . . More facts about this equipment are set forth in a Bulletin on these mills. It will not obligate you to write for a copy. Send for it today.

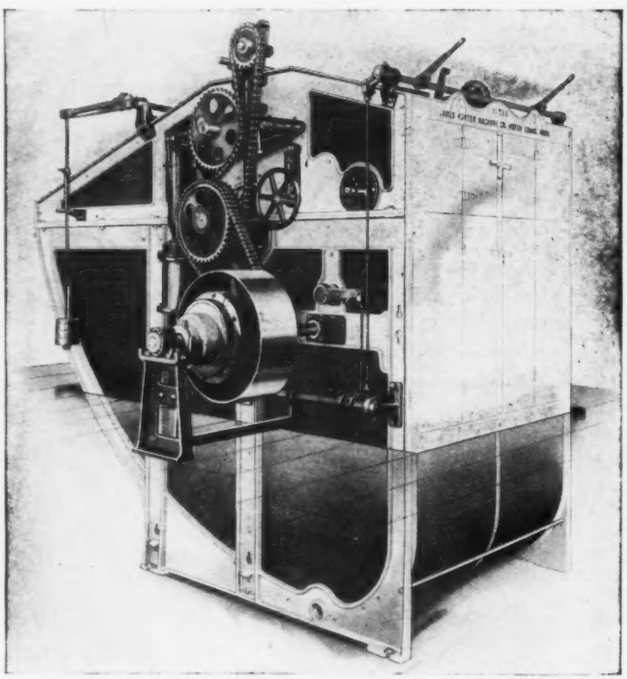


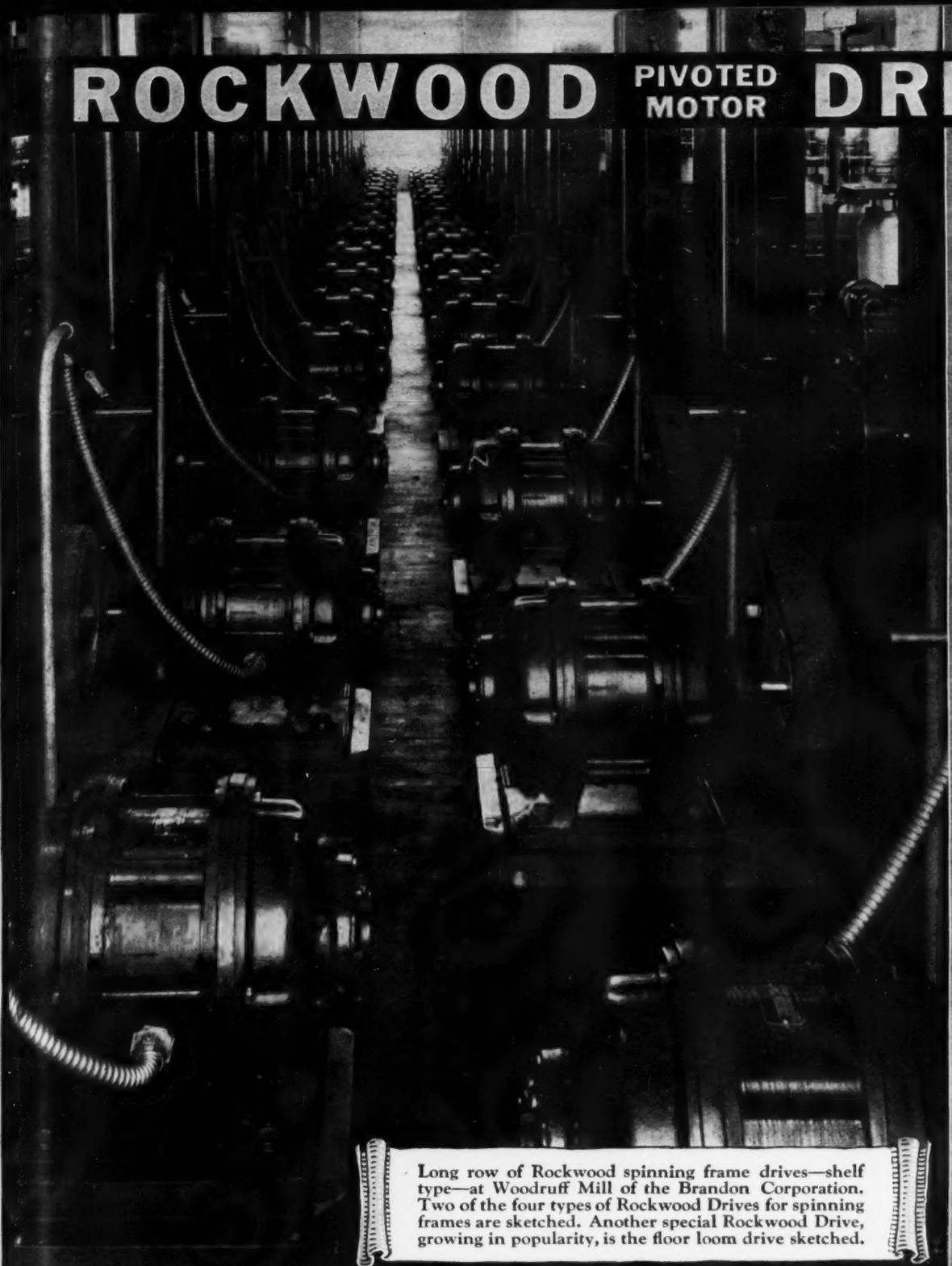
Illustration shows Hunter Stainless Steel Fulling Mill Model No. 26. Hydraulic Top Roll Tension furnished as extra equipment.

JAMES HUNTER MACHINE CO. Hunter NORTH ADAMS MASS.

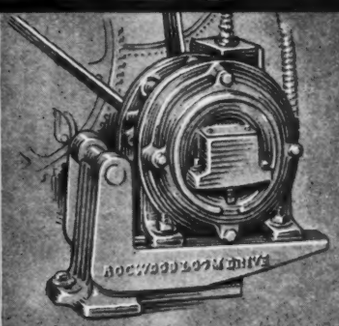
JAMES HUNTER MACHINE COMPANY

NORTH ADAMS, MASSACHUSETTS, U.S.A., Since 1847

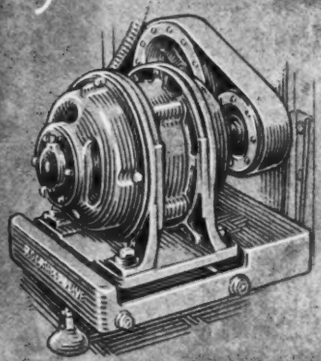
ROCKWOOD PIVOTED MOTOR DRIVES



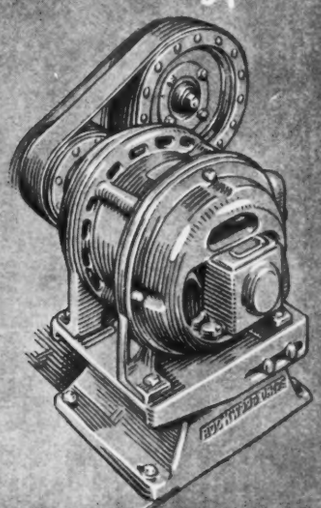
Long row of Rockwood spinning frame drives—shelf type—at Woodruff Mill of the Brandon Corporation. Two of the four types of Rockwood Drives for spinning frames are sketched. Another special Rockwood Drive, growing in popularity, is the floor loom drive sketched.



ROCKWOOD DRIVE *for* Looms



ROCKWOOD DRIVE Shelf Type



ROCKWOOD DRIVE Floor Type

"FOR THE FIRST TIME A TRULY SATISFACTORY SHORT CENTER DRIVE"

It is the opinion of many engineers and plant heads that the Rockwood Drive for the first time makes short-center motor drives truly satisfactory. In cotton textile plants thousands of installations have established Rockwood Drives as the proven standard for cotton textile machinery—*as the machine output is not only increased but of a better quality.* Outstanding in its advantages is the improvement in driven machinery performance—*as there is almost utter freedom from drive trouble and power consumption is decreased.* These are typical of the reports from the many great cotton mills that are installing Rockwood Drives continuously.

IF YOU ARE PLANNING TO BUY NEW MACHINERY—OR TO CHANGE YOUR OLD MACHINES IT WILL PAY YOU TO HAVE A ROCKWOOD ENGINEER CALL. He will point out the savings you can make. LET US HEAR FROM YOU.

Rockwood Manufacturing Company

1800 English Avenue, Indianapolis, Indiana

ROCKWOOD PIVOTED MOTOR DRIVE

Mills using

TRADE MARK REGISTERED

NON-FLUID OIL

IN U.S. PAT. OFFICE & FOREIGN COUNTRIES

On Looms

Save Money Because

NON-FLUID OIL does not drip and leak from bearings like liquid oil

Prevents "oil spot" damage to goods

Cuts oil and application cost by lasting longer

Let us show you how--with free testing sample!

NEW YORK & NEW JERSEY LUBRICANT CO.

292 MADISON AVENUE, NEW YORK

Works: NEWARK, N. J.

Southern District Manager: L. W. THOMASON, Charlotte, N. C.

Warehouses:

Charlotte, N. C.	Spartanburg, S. C.	Greenville, S. C.	Atlanta, Ga.
Providence, R. I.	Detroit, Mich.	Chicago, Ill.	St. Louis, Mo.

Silverlink

T. M. REG. U. S. PAT. OFF.

THE ROLLER CHAIN THAT'S BUILT FOR SERVICE —AND GIVES IT!

● Silverlink is a product of research and experience—an accomplishment of the leading manufacturer of chains. It is the superior finished steel, accurately pitched, roller chain for moderately high speed power transmission. It is also extensively used as a conveying medium.

Silverlink is made in ⅜" to 2½" pitch, in single and multiple-strand types, with a complete range of sprockets and attachments. Complete drives — Chains and Sprockets—from ¼ to 225 H. P., in speed ratios of 1 to 1, up to 8 to 1, are stocked by distributors, nationally. Send for Book No. 1557. Address Link-Belt Company, Indianapolis, Philadelphia, Chicago, Atlanta, San Francisco, Toronto or any of our offices located in principal cities.

5870

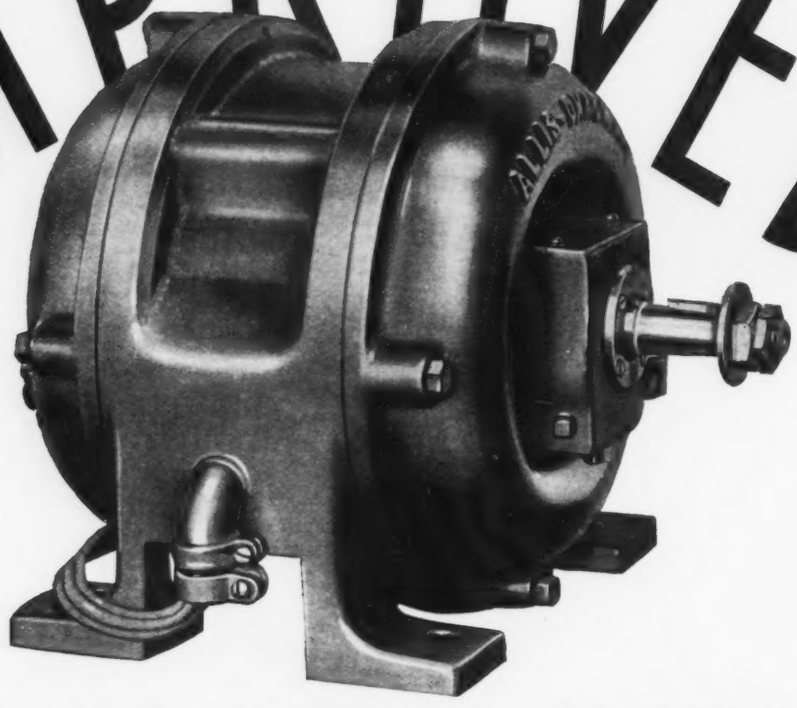
LINK-BELT

Builders of

THE COMPLETE LINE OF POSITIVE DRIVES

Silent Chain Drives • Roller Chain Drives • Variable Speed Transmissions • Herringbone Gear, Worm Gear, and Motorized Speed Reducers

IMPROVED



SPECIAL LOOM MOTOR

The newly designed Allis-Chalmers Loom Motor embodies all the latest developments and features that are of importance to loom application.

The peculiarities and exacting requirements of this application have been carefully studied and a special motor built accordingly.

The Allis-Chalmers Loom Motor is designed for low slip, resulting in close speed regulation from no load to full load. Its design, both electrically and mechanically, greatly improves loom performance, not only in efficiency but also in quality of product.

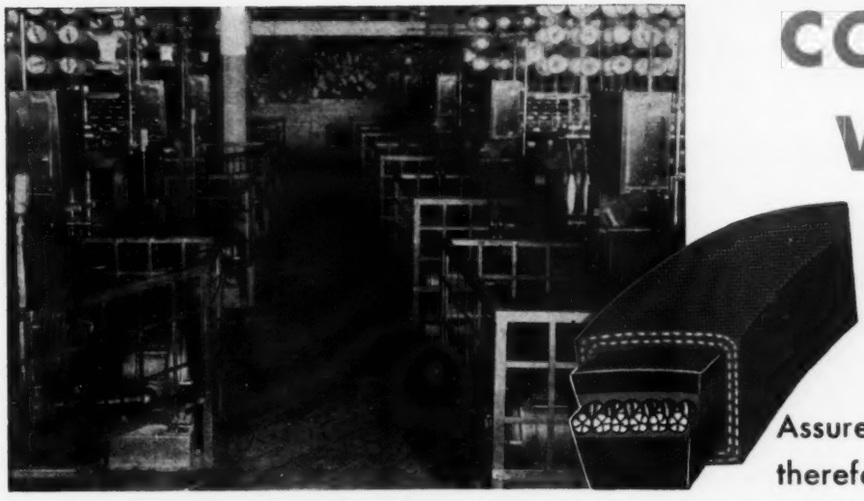
Some of the Features of the Allis-Chalmers Loom Motor:

1. Waste-packed sleeve bearings.
2. Indestructible rotor with bars silver brazed to the end rings.
3. Heavy cast iron bearing housings for rigid support of the rotor.
4. Totally enclosed to eliminate effects of dust and lint.
5. Stator frame of cast steel with feet cast integral.
6. Stator coils thoroughly insulated under process which makes windings moisture resisting.
7. Wound stator finally treated in special insulating varnish which provides a winding of high dielectric value and mechanical strength, a thorough protection against vibration in high speed loom service.
8. Ample reserve capacity for breaking in new looms.

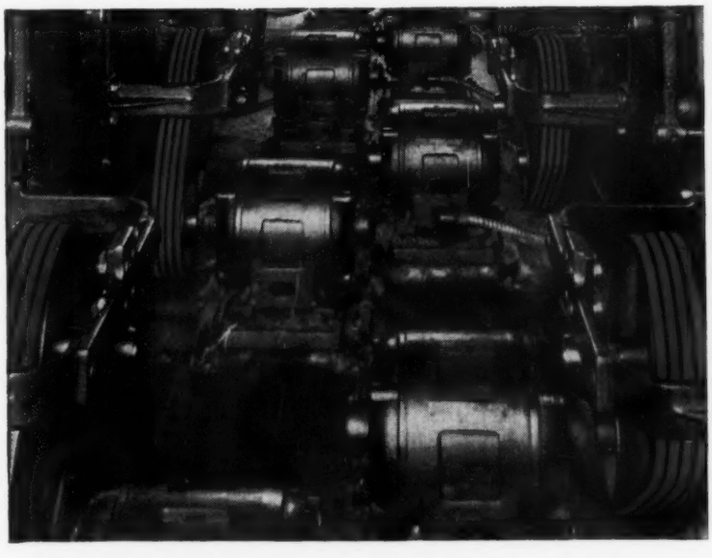
MOTOR DIVISION

ALLIS·CHALMERS

MILWAUKEE WISCONSIN



Condor Whipcord V-Belts on Twister Room Drives



Typical Condor Whipcord V-Belt Installations in limited space

CONDOR WHIPCORD V-BELTS

Assure "maintained front roll speed," therefore uniform twist and better spinning and, in weaving, uniform beat-up with more picks to the minute, hour, and day.

For the uniform speed so important in textile operations the 9-Point Balanced Construction of Condor Whipcord V-Belts give you better production . . . fewer "seconds." Because belt stretch does not exceed 1.6% to 1.9%, and internal heat caused by rapid flexing is virtually eliminated, Condor Whipcord V-Belts deliver outstanding performance even on the most severe drives. A trial will convince you.

9-Point Balanced Construction

1. Minimum Inelastic Stretch.
2. Wide Margin of Strength.
3. Uniform Flexibility.
4. Maximum Resistance to Structural Breakdown.
5. Smooth Running.
6. High Resistance to Side Wear.
7. Maximum Traction.
8. Correct Lateral Reenforcement.
9. Matched Length.

Condor PRODUCTS

V-Belt	Steam Hose
Transmission Belt	Suction Hose
Cone Belt	Molded Rubber Goods
Air Hose	Oilless Bearings
Acid Hose	Hard Rubber Pot Eyes
Water Hose	Rubber Lined Tanks
Fire Hose	Rubber Covered Rolls

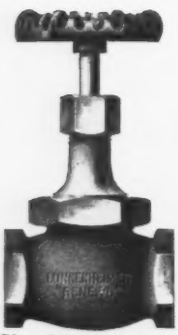
SOLD BY LEADING JOBBERS

THE MANHATTAN RUBBER MFG. DIVISION
OF RAYBESTOS-MANHATTAN, INC.

EXECUTIVE OFFICES AND FACTORIES, 47 TOWNSEND ST., PASSAIC, N. J.

For Enduring Service
Lunkenheimer Valves

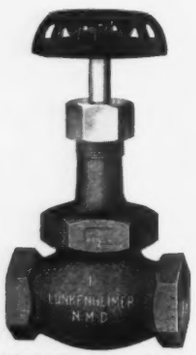
as exactingly made
as the finest Textiles


Plug Type "Renewo" Globe Valve

Bronze Gate Valve

"Ferrenewo" Globe Valve

"King-Clip" Gate Valve


"N-M-D" Globe Valve (Non-Metallic Disc)

"Causul" Metal Gate Valve, Monel Trim with Steel Stem

Stainless Steel Needle Valve

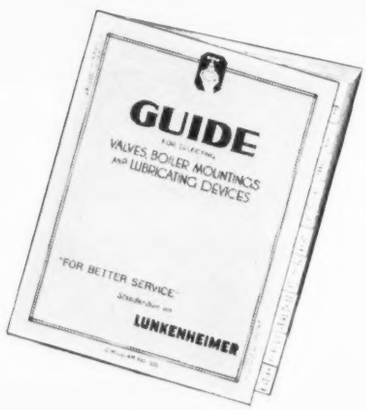
Iron Body Gate Valve

Regrinding Swing Check Valve

Lunkenheimer makes a large variety of bronze, iron, steel and anti-acid valves in a wide range of types and sizes. Exactingly made to provide long life with low maintenance expense, they find wide application on Textile Industry's many power and process lines.

Those illustrated and many more are shown in the Guide to Better Service, a ready reference in which valves are grouped for your convenience by pressure, type and use. It will prove a valuable aid in solving your valve problems. We will gladly send a copy on request.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO BOSTON
PHILADELPHIA SAN FRANCISCO
EXPORT DEPT. 318-322 HUDSON ST. NEW YORK



BOILER MOUNTINGS **LUNKENHEIMER VALVES** LUBRICATING DEVICES

MILITARY PRECISION. An interesting line-up of U. S. Royal Jr. Textile Transmission Belts, servicing a battery of card machines in a big southern cotton mill.

WITH U. S. ROYAL JR.! The new U. S. Royal Jr. is a transmission belt made of textiles for textile industry use. Super-flexible and built to stand heavy starting loads, high speeds, crossed drives, frequent shifting, U. S. Royal Jr. meets the requirements of every type of textile drive. On cards, spinners, and looms, U. S. Royal Jr. runs steady and true . . . giving greater R. P. M. with longer life and less care. Operators like its easy feel . . . its remarkable responsiveness! Proved product value . . . proved performance value . . . proved engineering skill . . . have been built into U. S. Royal Jr. Transmission Belts. That's why they give you—

SERVICE BEYOND PRICE AND SPECIFICATIONS

WRITE FOR YOUR FREE COPY *of this new U. S. Transmission Belt Album. Contains photographic case histories of belt problems and applications. Shows U. S. belts at work and in the making.*

UNITED STATES RUBBER COMPANY · US · TRADE MARK

United States Rubber Company

United States Rubber Products, Inc., New York, N. Y.

PRECISION BEARINGS

in 108 distinct series

To the machinery world, NORMA-HOFFMANN offers the most complete and comprehensive line of anti-friction bearings in America—108 distinct series—a PRECISION Bearing for every load, speed and duty.

Many of these have been pioneered, or specially developed, by NORMA-HOFFMANN engineers to meet specific requirements as revealed by advancing methods in machine design, manufacture and operation.

In times past, engineers often had to adapt their designs to the comparatively few standard bearing types then available. Today—with the wide range of types and sizes afforded by the standard NORMA-HOFFMANN PRECISION line, such compromise is seldom necessary.

In the 108 PRECISION Series are included: ball, roller, needle and thrust bearings; open, closed, and angular contact bearings; radial and self-aligning types; single and double row types; felt-protected, shielded, snap ring and self-sealed types. The size range is from 1/8- to 21-inch bore, embracing both metric and inch sizes. PRECISION Ball and Roller Bearing Pillow Blocks are also available in an extensive range of sizes.

Write for the Catalog. Let our engineers work with yours.

"NORMA-HOFFMANN"

PRECISION BEARINGS

BALL. ROLLER AND THRUST

NORMA-HOFFMANN BEARINGS CORP'N., STAMFORD, CONN. U.S.A.

SEWING ROOMS NEED THIS EXTRA LIGHT . . . CLEANLINESS

Workers "see faster"... do quicker and better work in this Save-Lite painted sewing room of the Erwin Cotton Mills. Cleanliness, too, is promoted by ceilings and walls of spotless white.

Every maintenance engineer, superintendent and foreman should have this plant conditioning text book. Write for your FREE Copy.

ERWIN COTTON MILLS, WEST DURHAM, N. C.

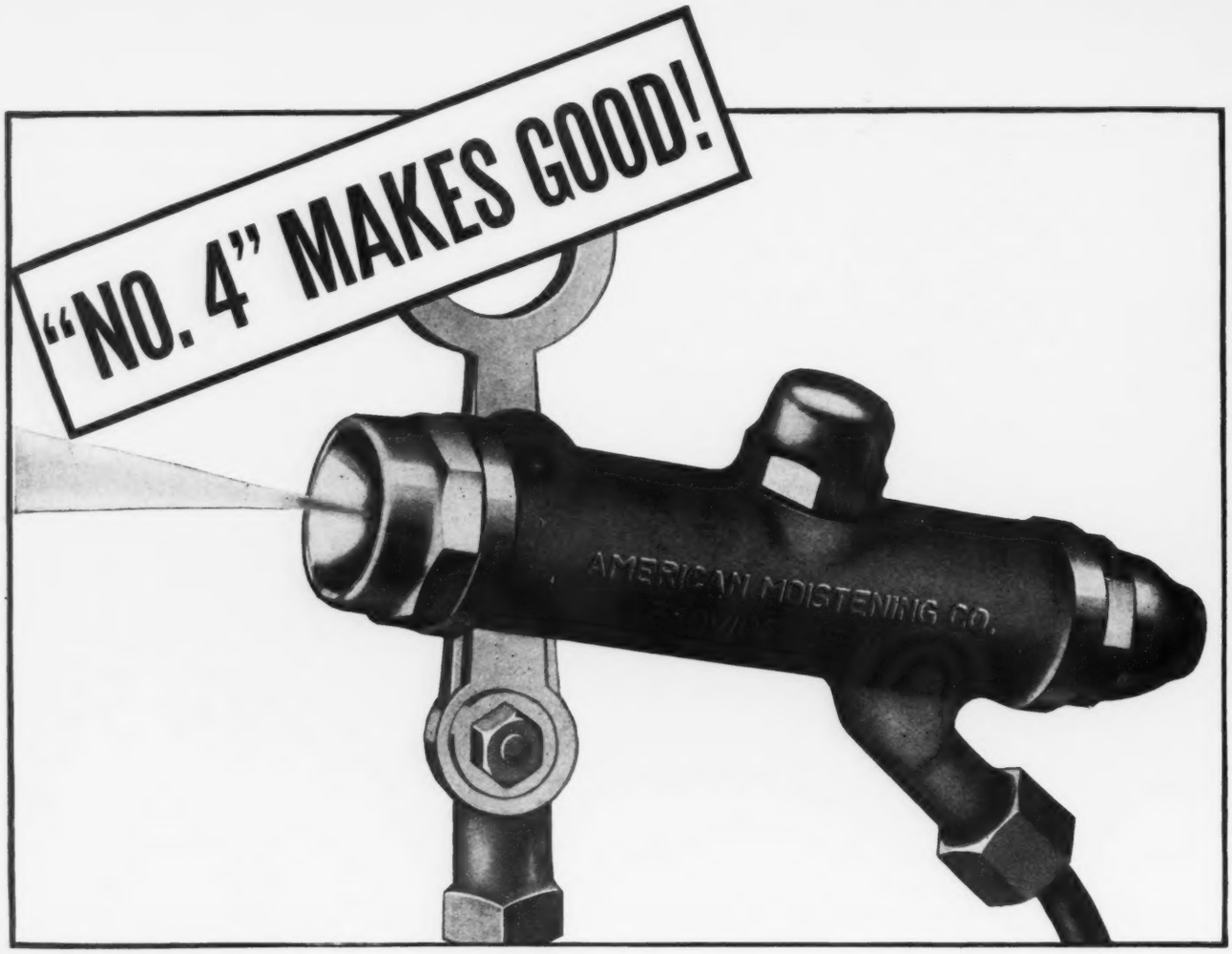
What Sherwin-Williams Save-Lite has done in this Erwin Cotton Mills drawing room, it can also do in your plant. Better light . . . better sight . . . better and happier workers . . . lower paint maintenance costs.

SHERWIN-WILLIAMS SAVE-LITE

THE PLANT CONDITIONING PAINT

THE SHERWIN-WILLIAMS COMPANY, CLEVELAND, OHIO, AND ALL PRINCIPAL CITIES

SEE THE SHERWIN-WILLIAMS PAINTING ENGINEER



AMCO FIRST SELF-CLEANING ATOMIZER SAVING MONEY IN SCORES OF MILLS . . .

The Amco No. 4 Self-Cleaning Atomizer has proved itself an important humidification development. Long past the trial stage, it is saving money in scores of mills where manual cleaning labor was formerly boosting costs. If you are not familiar with its operating principles, here are the quick facts:

Both air and water orifices of the No. 4 are *automatically* cleaned whenever the air supply is shut off by humidity control or manual operation.

The smooth concave surface around the nozzles is kept clean of lint and fly by streamlined currents of induced air.

Drip, or "feathering down", is prevented by an exclusive built-in feature which shuts off water supply when air pressure falls below the proper point for good atomization. Water is not admitted to the nozzle again until air pressure has risen to the proper atomization point.

These pioneered developments by Amco, plus improved construction, make the No. 4 Self-Cleaning Atomizer well worth your investigation, for new work or replacement. Facts on request. American Moistening Company, Providence, R. I. . . . Boston . . . Atlanta . . . Charlotte.

AMCO HUMIDIFICATION

TAKE YOUR HUMIDIFICATION JOB TO A HUMIDIFICATION SPECIALIST

You get Protection for TOMORROW At No Extra Cost TODAY

with VEEDER-ROOT'S 2-3 RESETTING PICK COUNTER

ADD THE 3rd SHIFT at your mill— WITH 3 SCREWS

As a sound business policy—to protect your investment in counters—get this future security *now.* Equip your looms with Veeder-Root's 2-3 Resetting Pick Counter . . . the counter that provides for today, *and prepares you for tomorrow.*

You buy a 2-shift counter now, but with it you get —at no extra cost—quick convertibility to a complete 3-shift counter when needed. Only then do you buy the third counting unit, which your own mechanics can readily attach in a few moments, with 3 screws. This gives you a complete 3-shift counter for little more than you would have to pay for one in the first place. Changeover is so quick and easy that there need be no delay in production, no confusion in production records. Operation can go forward without a hitch.

Let us show you the advantages you will gain in equipping your looms with Veeder-Root 2-3 Pick Counters . . . the amount of time, trouble and money you will be enabled to save. Demonstration for the asking. Write the nearest Veeder-Root office today. No obligation, of course.

Veeder-ROOT

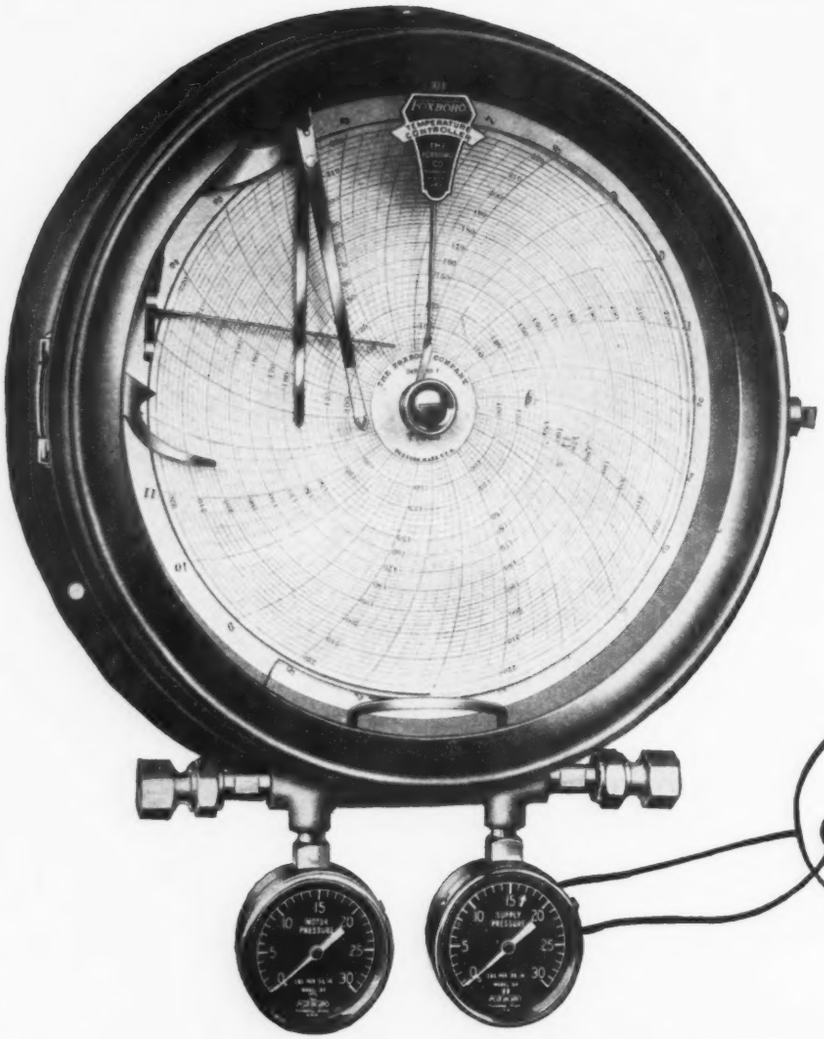
INCORPORATED

HARTFORD, CONN. GREENVILLE, S. C.

BOSTON PHILADELPHIA MONTREAL LONDON

BUILDERS OF COUNTING DEVICES SINCE 1878

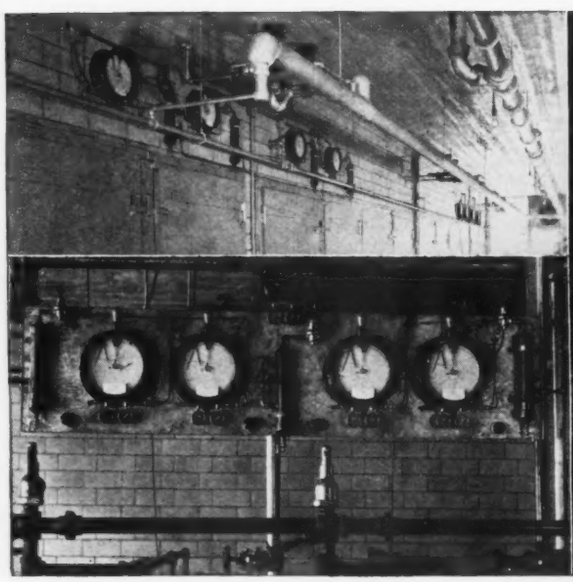
The Simplest

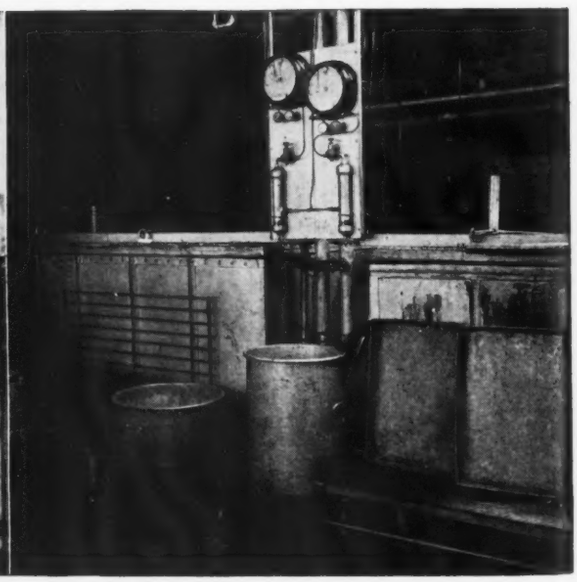


for

$132.50
BASE LIST PRICE

Ovens, furnaces, driers, vats, cookers and many hundred similar pressure and temperature control applications in every branch of industry are numbered among the 65% — the ideal jobs for Foxboro "open and shut" type Recorder-Controllers.





is the Best...

65%

OF ALL TEMPERATURE AND PRESSURE CONTROL APPLICATIONS

Yes! 65 per cent of all temperature and pressure applications can best be handled by the simplest recorder-controller, the "Open and Shut" Type, originated by Foxboro 24 years ago and perfected by Foxboro. It is still the most efficient, dependable and economical for these applications. And it has another virtue—it costs less.

Set it to the desired control point! No further adjustments are needed to obtain satisfactory performance. The control point never wanders—remains fixed until you change it. Moreover, the Foxboro Recorder-Controller has fewer parts. In fact, every feature contributes to savings in operating and maintenance time.

Any one of our representatives can and will gladly tell you to which of your jobs you can apply these simple controllers. Just drop us a line or phone the nearest Foxboro office. Write for Bulletins 205 and 185. They describe these instruments in detail. The Foxboro Company, 84 Neponset Ave., Foxboro, Mass., U.S.A., branches in 25 Principal Cities.

35%

REQUIRE MORE COMPLICATED MECHANISMS

Eight years ago the Stabilog was perfected for this type of application but it does not replace "Open and Shut" control on the larger per cent of applications.

FOXBORO

REG. U. S. PAT. OFF.

TEMPERATURE AND PRESSURE CONTROLLERS

RESPONSE·ACCURACY

Says the

CONCORD KNITTING COMPANY

MANUFACTURERS OF

WOMEN'S FINEST GAUGE SEAMLESS SILK HOSIERY

(300 AND 340 NEEDLE)

CONCORD, NORTH CAROLINA

"We consider it practically impossible to run high twist 3-thread silk on seamless Knitting machines without conditioning it in the H-W Conditioner."

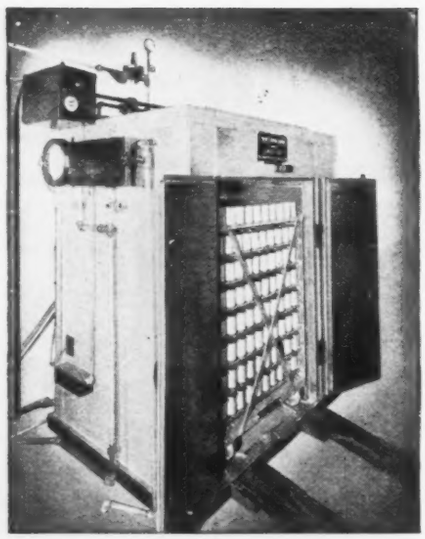
The Concord Knitting Company and the Hoover Hosiery Company, both of Concord, N. C., jointly created the Concord Silk Throwing Company. They have an H-W Conditioner to condition and set the twist in the silk yarns they both use. The opinion of the CONCORD people is from a recent letter, and speaks for itself!

• *The* Hoover Hosiery Company also uses H-W Conditioned Yarns

The Hoover Hosiery Company manufacture ladies full fashioned silk hosiery on 51 gauge machines, from a very high twist crepe yarn in 2 and 3 thread construction. These yarns are all H-W Conditioned, the twist being *set perfectly* and results being *excellent.*

The H-W Conditioner and Twist Setter is so efficient because it actually transforms water into a GAS which penetrates every yarn fibre and speeds the setting process. Relative humidity and temperature are held under exact control.

Write for details on the several types of "H-W" Conditioners for all types of yarns—also "H-W" Humidifiers.



The "H-W" Conditioner and Twist Setter

Protected by both process and apparatus patents No's. 1,564,566; 1,605,634; 1,853,419; 1,853,421; 1,853,423 and 1,853,424.

The Industrial Dryer Corporation

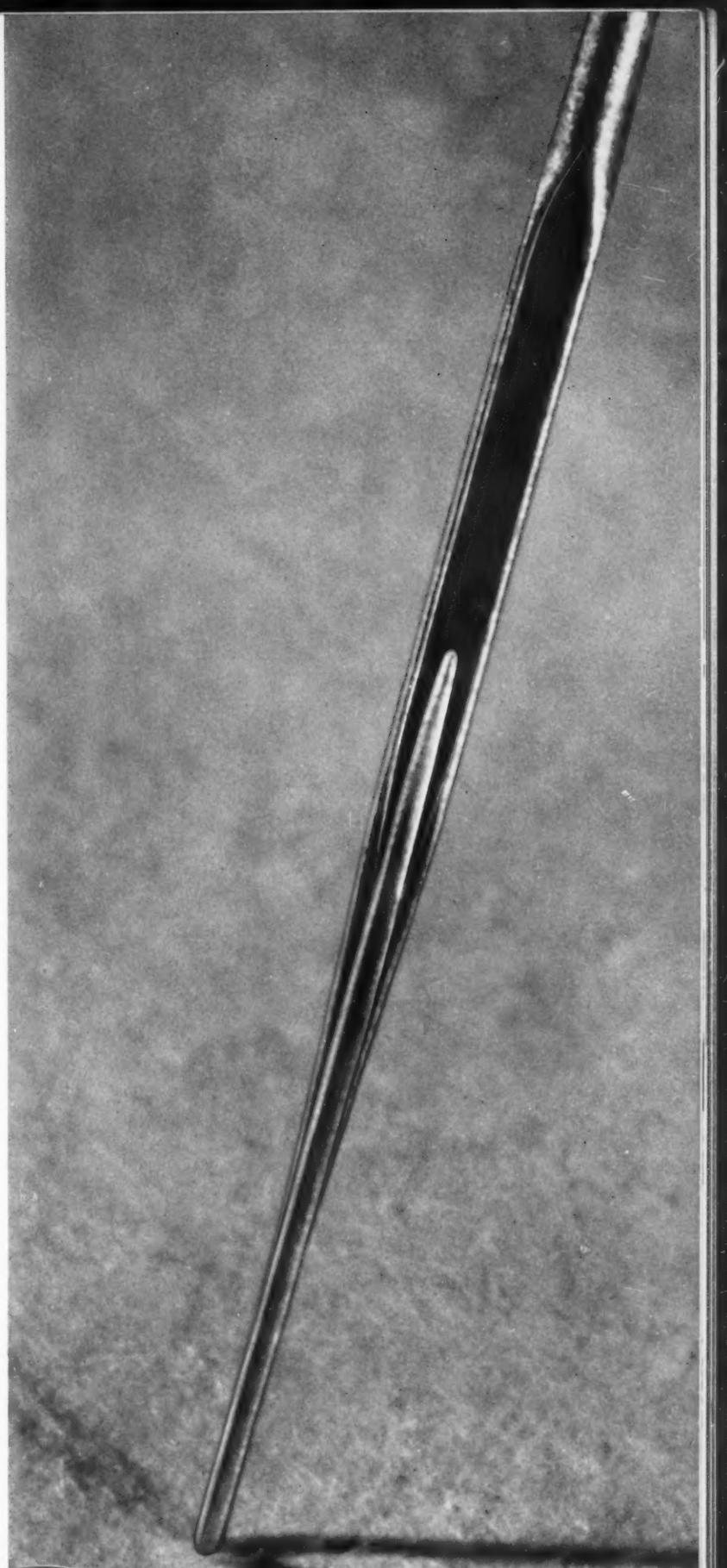
Stamford, Connecticut

uniform alignment of

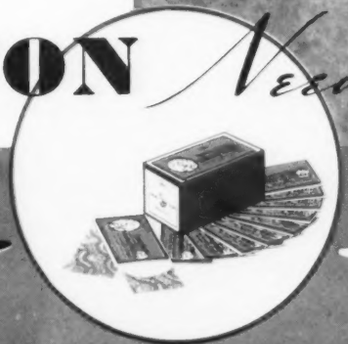
GROOVE AND BEARD

THE more accurately the beard is aligned with the groove in a full-fashioned needle the more accurate the stitches it lays—and the less likely it is to drop a stitch. On this point Torringtons are more reliable because their beards and grooves are aligned with extra precision by special machines. Torringtons are machine-made from tip to butt—and machines are used to check the uniformity of every dimension. That is why they give you smoother results and keep your needle troubles down.

Torrington sinkers, dividers and split dividers are also machine-made with the same exacting attention to details.



TORRINGTON *Needles and Sinkers*



KNITTING JOBS THAT CALL FOR

GOOD NEEDLES

The creation of such authentically styled, superbly knitted merchandise is the aim of every careful manufacturer. Many, a great many, have done it, are doing it and will do it again with Torrington Needles. Torringtons are stronger, smoother finished, finer tempered, *machine-made* needles—the kind *you* need to do high quality knitting.

TORRINGTON *Latch* **NEEDLES**

THE TORRINGTON COMPANY — TORRINGTON, CONN., U.S.A.

The Torrington Company, 1640 Fairmount Ave., Phila., Pa.
The Torrington Co., Inc., 200 Fifth Ave., New York, N. Y.
The Torrington Company, 538 South Wells St., Chicago, Ill.
The Torrington Company, Guilford Bldg., Greensboro, N. C.

The S. M. Supplies Co., 210 South Street, Boston, Mass.
Los Fabricantes Unidos, 964 Calle Belgrano, Buenos Aires
Factories at: Torrington, Conn., Coventry, England, Upper Bedford, Quebec, Aachen, Germany.

STEVENS MILL EXECUTIVE PRAISES TRANSPARENT WRAP FOR QUALITY PROTECTION

"Cellophane" Wins Bigger Sales . . . Helps Speed Up Production

MR. H. W. CRAWFORD, of Stevens Linen Works, Webster, Mass., says:

"Our selling agents advise us that they sold three times more 'Cellophane' wrapped sets of Stevens Towels, Dish Cloths and Pot Holders than they anticipated.

"Here at the mill, we think this consumer acceptance justifies 'Cellophane' from two angles.

"As a *sales aid,* it steps up the appearance of the sets which we are so proud of. As a *protection,* it carries our original quality right into the home, clean and unchanged."

WRAPPING INFORMATION

Our experienced Field Representatives are qualified to help with suggestions about efficient production line methods in packaging. No obligation. Just write: E. I. du Pont de Nemours & Co., Inc., "Cellophane" Division, Empire State Building, New York City.

Cellophane
TRADE MARK

DU PONT
REG. U. S. PAT. OFF.

"Cellophane" is the registered trade-mark of E. I. du Pont de Nemours & Co., Inc.

A QUICK LOOK BACK—

ANOTHER PAGE FROM A TEXTILE SUCCESS STORY
TEN-YEAR HISTORY OF TAYLOR AUTOMATIC SLASHER CONTROL FILLED WITH CASES OF ITS SAVINGS AND PRODUCTION ADVANTAGES. A RICH EXPERIENCE OF MILL PIONEERING AND ENGINEERING AVAILABLE TODAY FOR YOUR SLASHING ROOM
An Arkwright test of vital interest to mill men
Taylor Instrument Companies
Quality Fluctuates with these Temperature Lines
Advertising during the last ten years helps to establish Taylor Engineers as pioneers in automatic control systems for the textile industry.
Tycos Blazes the Way to Slasher Room Profits
COOKING
When Installed on the three Slashing Processes
IMPREGNATING
DRYING
Send today for information showing how your mill may profit by investing in the Tycos System of Slasher Control.
Taylor Instrument Companies
TycosTemperature Instruments
INDICATING - RECORDING - CONTROLLING
Even before this advertisement appeared years ago, Taylor Engineers pioneered a System of Slasher Control and showed mills a new way to profit
Tycos Automatic Control on Size Cooking Kettles
Send for Textile Catalog Part 3 and Information on Tycos Slasher Control System
Taylor Instrument Companies
TycosTemperature Instruments
INDICATING - RECORDING - CONTROLLING
Taylor
Indicating · Recording · Controlling
TEMPERATURE, PRESSURE and FLOW INSTRUMENTS

A PROMISE OF REWARD

for Mills Today and Tomorrow

LET TAYLOR SYSTEMS OF TEMPERATURE, PRESSURE AND HUMIDITY CONTROL HELP YOU SAVE MONEY AND GUARD PRODUCT QUALITY FROM NOW ON

MORE than ten years ago, Taylor Engineers pioneered in designing, making and installing automatic Temperature Control in Slasher Rooms. Today, a great wealth of experience is at your disposal in coordinating every step in the slashing process by means of Taylor Instruments engineered to meet your mill's special requirements.

But Taylor offers more than that highly specialized service today. Wherever uniformity of quality and production economy depend on accurate, close control of temperature, pressure and humidity—from slashing to finishing—Taylor Systems of Control can serve you. Taylor engineers consider a control problem on the basis of specific results to be obtained in terms of mill output and costs. They aim to prove the dollar and cents value of every Taylor installation that is made.

With Slasher Control, for example, they work to make warps run more smoothly and decrease warp breakage; to reduce loom stoppages, increase production speed, and cut down steam consumption; to reduce shedding and save cotton; to increase weave-room efficiency and produce uniform finished goods at lower cost.

Other Taylor Systems designed for textile mills are Kier Control, the Mercerizer Control, the Steam-Heated Calender Control, Enzyme-Type Desizing Control, Starch Back-Filling Preparation Control, the Soaper Control. the Conveyor-Type Drier Control, Wool-Scouring and Stock-Drying Control.

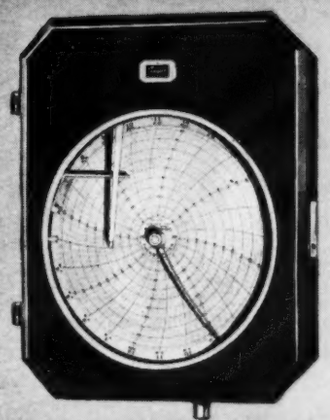
Let Taylor Engineers help you determine whether temperature pressure and humidity control can be used to greater advantage. For detailed information on all Taylor Control Systems, ask a Taylor Representative or write Taylor Instrument Company, Rochester, N. Y. Plant in Toronto, Canada. Manufacturers in Great Britain—Short & Mason, Ltd., London, Eng.

Taylor

Indicating Recording Controlling

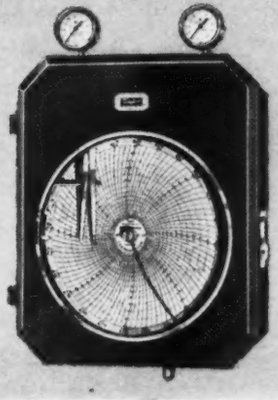
TEMPERATURE, PRESSURE *and* FLOW INSTRUMENTS

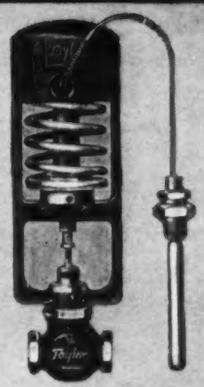
THESE INSTRUMENTS ARE VITAL PARTS OF TAYLOR CONTROL SYSTEMS. WRITE FOR SPECIAL BULLETINS DESCRIBING EACH.



TAYLOR RECORDING THERMOMETER. Every variation of temperature is automatically charted on this modern instrument, providing a check on apparatus and employee efficiency.

TAYLOR "FULSCOPE" RECORDING CONTROLLER. As accurate and durable an instrument as you can find today for maintaining automatically temperature, pressure, rate of flow or liquid level. An exclusive Taylor development, the Universal Sensitivity Adjuster, gives a wide range of control at the turn of a screwdriver.





TAYLOR SELF-ACTING TEMPERATURE CONTROLLER. Designed for use where compressed air is not available, where expense of an air-compressor is not warranted and where control within very close limits is not so vital. Has quick response and a wide variety of uses.

FAIRBANKS
PRINTOMATIC
WEIGHERS

SAVE MONEY

★

. . . by reducing errors
. . . by strict accounting for materials handled
. . . by guarding processing

In the shipping and receiving rooms, they account faithfully for every pound of raw materials and finished goods, providing indisputable, accurate records on automatically printed weight tickets. During processing operations, during bleaching and dyeing operations, they not only supply the figures that modern cost accounting demands, but they prevent delays by speeding work, and cutting handling time wherever they are installed.

Textile manufacturers are using Fairbanks Printomatic Weighers to cut overhead costs, to save money. For full information on what they can do in your plant, write for Bulletin E-692. Address Fairbanks, Morse & Co., 900 S. Wabash Avenue, Chicago, Ill. And 40 principal cities—a service station at each house.

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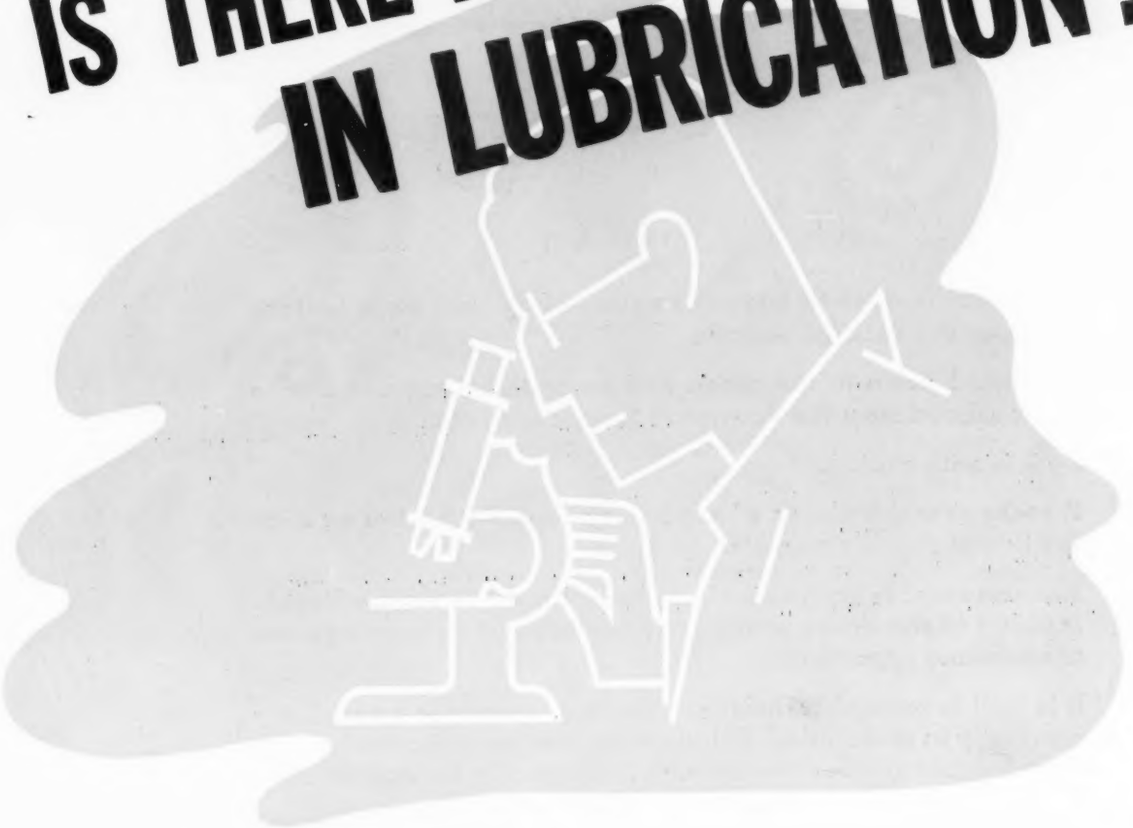
FAIRBANKS
PREFERRED THE WORLD OVER
FAIRBANKS SCALES
Scales

IS THERE A *Plus* IN LUBRICATION?



IT'S SHELL'S "*Invisible Element*"*

WHEREVER a wheel turns or metal rubs against metal . . . in coal mines or steel mills or logging camps . . . there Shell engineers have set for themselves the task of developing the best lubricants that experience, research and refineries can provide!

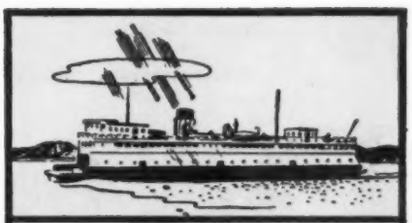
Plant superintendents, owners and purchasing agents all over the world have learned the dollar-and-cents value of Shell's "Invisible Element."* They see it demonstrated daily, when they observe how successfully Shell Lubricants are meeting the needs of industry in hundreds of varied ways.

Shell welcomes every challenge to solve a difficult lubrication problem. Have *you* such a problem?

A request to Shell's Industrial Lubricants Division, Shell Building, San Francisco; or Shell Building, St. Louis; or 50 West 50th St., New York, will bring a representative to your office at no obligation to you.

***SHELL'S "INVISIBLE ELEMENT"** *is a combination of Shell's unmatched world-wide resources, decades of cumulative experience and research by Shell's engineers and scientists, Shell's modern laboratories and refineries. It is the determination to make lubrication more efficient, more economical for you!*

SHELL **INDUSTRIAL LUBRICANTS**



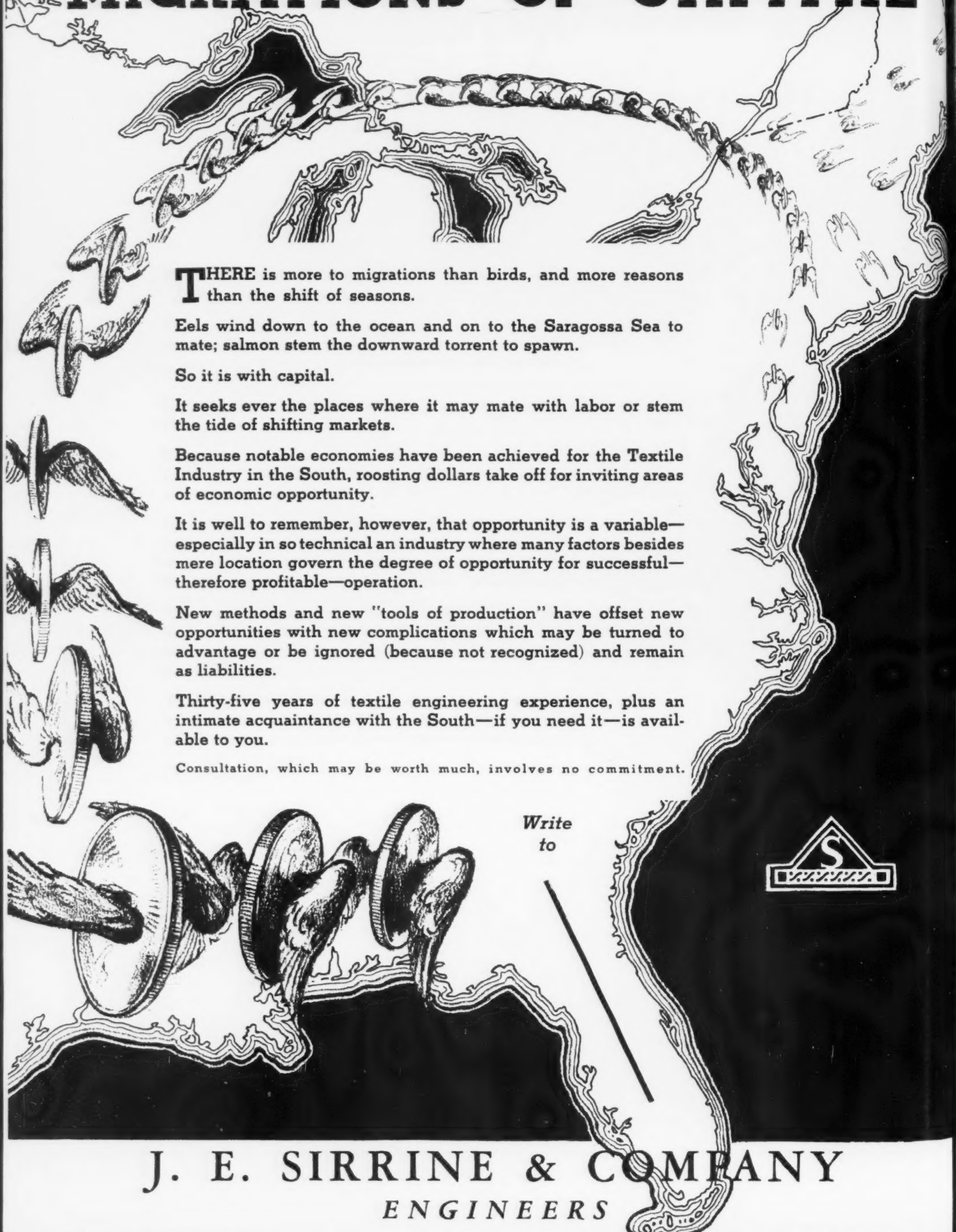
From a recent issue of DIESEL PROGRESS we quote excerpts of an article on the ferry boats, CHIPPEWA (shown above) and KALAKALA, which ply between Seattle and Bremerton, Washington:

"Neither engine has had new liners, has been rebored, has had new pistons, or any grinding done . . .

"Lube oil is centrifuged six times per day . . . and the original oil* in the Chippewa, placed there five years ago, is still there!" . . . The only additional lube oil placed in the system was to make up feed.

*Shell Argus Oils for Marine Diesels

MIGRATIONS OF CAPITAL



THERE is more to migrations than birds, and more reasons than the shift of seasons.

Eels wind down to the ocean and on to the Saragossa Sea to mate; salmon stem the downward torrent to spawn.

So it is with capital.

It seeks ever the places where it may mate with labor or stem the tide of shifting markets.

Because notable economies have been achieved for the Textile Industry in the South, roosting dollars take off for inviting areas of economic opportunity.

It is well to remember, however, that opportunity is a variable—especially in so technical an industry where many factors besides mere location govern the degree of opportunity for successful—therefore profitable—operation.

New methods and new "tools of production" have offset new opportunities with new complications which may be turned to advantage or be ignored (because not recognized) and remain as liabilities.

Thirty-five years of textile engineering experience, plus an intimate acquaintance with the South—if you need it—is available to you.

Consultation, which may be worth much, involves no commitment.

Write to

J. E. SIRRINE & COMPANY

ENGINEERS

GREENVILLE SOUTH CAROLINA

"PARADE OF THE VALVES"

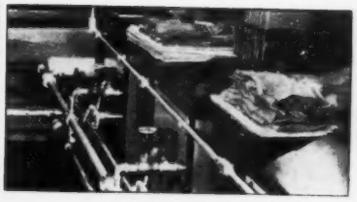
Big brutes of valves, little baby valves. Needle valves, globe valves, gate valves, pop valves. Brass, steel, iron and alloy valves. Valves for gas, air, oil, water, steam and chemicals. Any kind of valve—the biggest valve parade on earth!

Crane makes them—from a 40-cent "dwarf" to a 40-ton monster, Crane has the valve you want. You'll find them in the Crane No. 52 Catalog.

Maybe your valve problem seems special. Maybe you are wrestling with higher temperatures, greater pressures. Save time and cost by making use of Crane's 82 years of experience in valve making. You'll find the solution for most valve and piping problems in your Crane No. 52 Catalog. It contains the details regarding 38,000 items, tested in the laboratory and proved on the job. Use it whenever you need valves, fittings, pipe or accessories. CranEquip for satisfaction.

plied in the next few days.

CRANEQUIPPING INSURES PRODUCTION



BOSTON, MASS., Jan. 18—Spindles are whirling busily in the textile industry today and executives are far more concerned with keeping production up than with sales.

Many mills need to install new machinery and are facing possible partial third-shift operations to make up for the interruptions in production while re-equipping.

Plants that are CranEquipt when being built or reconditioned insure themselves against interrupted operations due to piping troubles.

There are Crane valves and fittings for all phases of process and service piping—highest quality, modernly designed, of metals or alloys suitable to handle your corrosion problems.

See Crane Catalog for Specifications and Data

Your Crane No. 52 Catalog contains the detailed specifications of the greatest army of valves and fittings in the world. Use it to make ordering easy. You will also find in it a vast amount of concise engineering data and tables which have proved of service to engineers in dealing with piping problems. We urge you to look over this feature of the Crane catalog carefully so that you will know just where to find information when you need it.

CranEquip as you repair, maintain, enlarge or build. It's the easy, economical route to piping satisfaction.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO, ILLINOIS

Branches and Sales Offices in One Hundred and Sixty Cities

VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

Trail Blazers

Throughout more than three quarters of a century, WOOD'S have been aggressively in the lead in the design and manufacture of quality Power Transmission Equipment. For more than three quarters of a century, WOOD'S have labored to the end that WOOD'S Devices would constitute a complete line of power saving equipment, unequalled for pure dollar value.

Today, the acknowledged advantages of WOOD'S devices—their use and performance in every industry—are a well blazed trail, safe to follow in the selection of your source for such equipment.

Investigate WOOD'S before next you buy!

T. B. WOOD'S SONS CO. CHAMBERSBURG, PA.

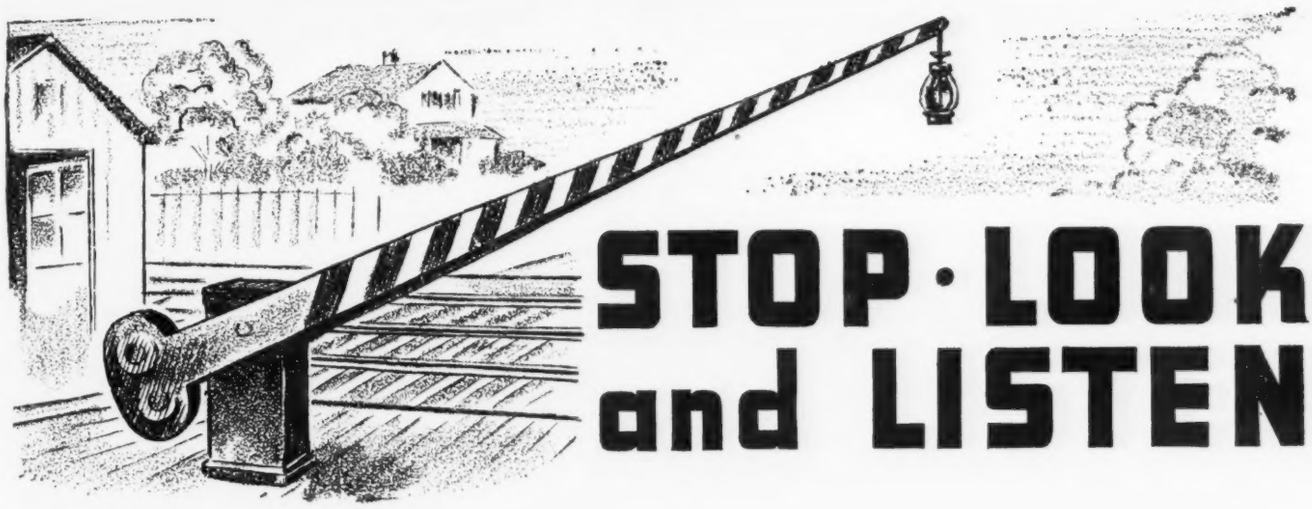
WOOD'S PRODUCTS

Shafting, Hangers, Collars, Pulleys, Friction Clutches, Ball Bearings, Flexible Couplings, Rope Sheaves, Pillow Blocks, Belt Contactors, V-Belts, V-Belt Sheaves and complete V-Belt Drives.

T. B. WOOD'S SONS CO.

50 Church St., New York City — **CHAMBERSBURG, PA.** — 387-391 Atlantic Ave., Boston

MEMBER: The Mechanical Power Engineering Associates



STOP · LOOK and LISTEN

ALL of us who are connected directly or indirectly with the Textile Industry look forward to continued good business. Straws floating by indicate which way the wind is blowing. And the speed with which the straws pass plainly shows that many have a heavy foot on the gas pedal.

Where are we going? Not so long ago we were in the doldrums. Not enough breeze stirring to lift a straw off the ground. Perhaps this is a good time to stop, look and listen—at least for a few minutes—in an effort to try to see into the future.

Of several things we can be sure. Mills are rapidly buying new equipment from pickers to looms and from bleach house washers to calenders. This new equipment must operate at higher speeds and with greater accuracy than ever before. It must produce "more and better yarn or cloth at less cost."

We can be sure that speeds are not going to decrease. They will increase as time goes on. The demand for greater accuracy will increase also. But higher speeds and greater accuracy cannot be maintained economically or for long unless machines are equipped with bearings designed to meet these conditions.

And that's where Hyatt Roller Bearings come into the picture. Designed for speed and accuracy they will maintain their initial accuracy and that of the machine for many profitable operating years.

The increasing number of Hyatt Roller Bearings adopted as standard equipment by the builders and the increasing number of these bearings being specified by the mills in looms for example, is positive testimony that the worth of these long-lived bearings is appreciated.

So take time by forelock. Make sure your new machines, whether wool, silk, rayon or cotton, are equipped with these modern roller bearings and prevent them from becoming obsolete a few years hence. Specify Hyatts for pickers, drawing, cards, spinning, looms and all finishing machinery. Hyatt Bearings Division, General Motors Corporation, P. O. Box 476, Newark, New Jersey.

HYATT

Roller Bearings

Out with the Old Color —in with the New!

When your dye vats are lined with Armco Stainless Steel, production moves swiftly and surely. No scrubbing, no costly delays, no fussing and fuming.

The hard silvery-smooth surface of this rust-proof metal cannot absorb the most penetrating dyes. Simply run the batch, wash out the vat, and you're ready to go with another color. Boiling and bleaching, the old bugaboo of the dyeing department, is an ordeal of the past.

It is easy to get Armco Stainless Steel in the equipment you buy or make. Specify it by name when you buy—write us or see the nearest Armco Stainless Distributor for your own requirements. And of course we'll be glad to assist in the solution of special or difficult requirements. The American Rolling Mill Co.

Executive Offices, Middletown, O.

ARMCO

Armco Stainless Steels

Hundred Horsepower Hands!

● Only one pair of hands; but placed on the handle of a YALE Hand Lift Truck—they match the power of a hundred horses!

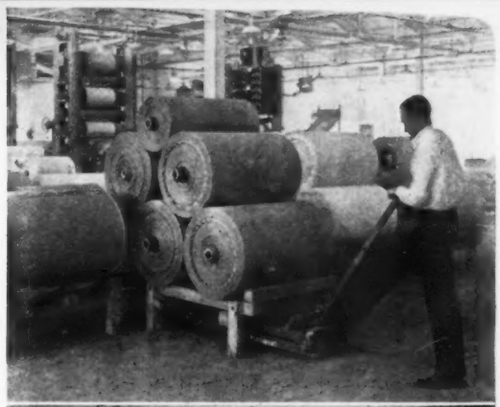
You can't wring profits from today's highly competitive markets with haphazard methods. It takes high-geared efficiency at low-geared cost to put the black ink in your ledgers . . . the kind of efficiency that a YALE Hand Lift Truck and Skid Platform System throughout your plant will give!

Sturdy . . . Saving . . . Safe . . . YALE Trucks carry the burdens of American industry. Step into almost any successful plant * and you'll find them economically going about their business of Lifting . . . Hauling . . . Storing! Powerful profit makers—that's what they are!

Made in all sizes—Single and Multi-Stroke models—types and capacities of 1,000 to 20,000 lbs.—there's a YALE Truck to fit your every need. Designed and built by YALE engineers to give lasting economical service, you'll find them the answer to your materials handling problems.

Let a YALE representative show you how you, too, can give your workmen Hundred Horsepower Hands.

* WE'LL BE GLAD TO SEND YOU NAMES OF INDUSTRIAL LEADERS EVERYWHERE WHO ARE SAVING TIME AND MONEY THE YALE TRUCK WAY



TEXTILE PLANTS—find money-saving uses for Yale Hand Lift Trucks. Large loads are easily transported through various processing operations. When you YALE-IZE — you ECONOMIZE!

SPEED ECONOMY **YALE** SAFETY EFFICIENCY

IN MATERIALS HANDLING

THE YALE & TOWNE MANUFACTURING COMPANY, PHILADELPHIA DIVISION, PHILADELPHIA, PA.

★ LOOK TO REEVES FOR ACCURACY IN SPEED CONTROL ★

Two REEVES Vertical Enclosed Design Transmissions applied to Tape Finishing Machine. Transmission at left drives complete machine. Transmission at right controls and synchronizes horizontal drying section.

FOR *Uniformity* IN MILL PROCESSES...

REEVES VARIABLE SPEED CONTROL

Uniformity throughout mill production and in finished goods implies accurate variable speed control of machines. To most mill operating executives this means REEVES—as represented by the Variable Speed Transmission, Vari-Speed Motor Pulley or Vari-Speed Motodrive.

These units, each filling specific requirements, are built in many sizes and designs for practically any type of control and offering precision speed adjustability for all kinds of textile machines.

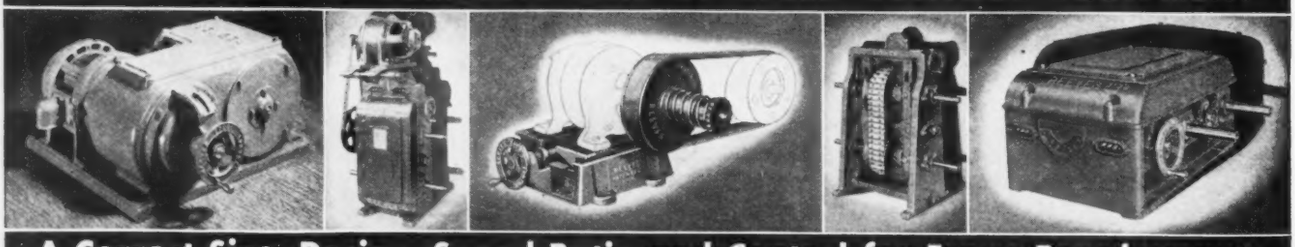
For instance, on *sanforizers*, REEVES Transmissions driving feed rolls maintain uniformity in tension on goods. REEVES automatic control of the *one-process picker* increases or decreases speed of feeder or calender to correct inaccuracies in the lap. In *dryers*, REEVES controls conveyor speeds to insure uniform drying of different widths and weights of fabric. A REEVES Transmission maintains uniformity in tension on goods passing through *quetsch*, *tenter frame* and *palmer*. Replacing cone pulleys on *slashers*, REEVES makes speed changes easy, increases production and gives uniform cylinder and drying speeds.

Investigate the many profitable possibilities of more extensive use of variable speed control in your processing and finishing operations. REEVES units are easily applied to machines now in use in cotton, wool, silk and rayon manufacture. When you buy new machines, be sure they are also REEVES-equipped. Most leading builders now apply the REEVES as standard equipment.

Experienced REEVES engineers are at your service in helping you to work out any application. Write for copy of Speed Control Handbook W-37 with a special section on textile machine applications and engineering data.

REEVES PULLEY COMPANY, Columbus, Ind.

REEVES BUILDS A COMPLETE LINE OF SPEED CONTROL EQUIPMENT



A Correct Size, Design, Speed Ratio and Control for Every Requirement

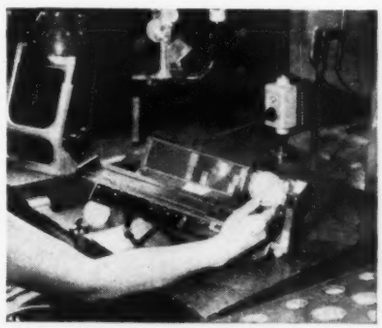
HOW TO AVOID PAYING FOR WASTED ELECTRICITY

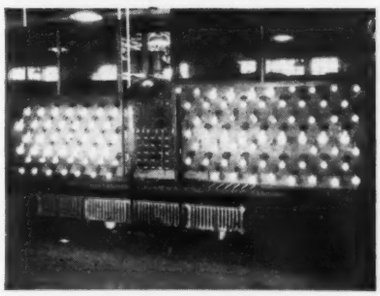
. . . use lamps that Stay Brighter Longer

YOU can't save money on light by buying inferior bulbs. "Electric Eye" tests show they often waste as much as 30% of the light you pay for. Instead of saving money when you buy cheaply made bulbs, you usually suffer a loss because of wasted current.

General Electric MAZDA lamps are carefully made according to precise, scientific standards . . . . standards that are much more severe than Federal Specifications. To insure that these are met and maintained, there are 480 different checks and inspections made in the course of manufacture.

Next time you buy lamp bulbs, follow the example of America's shrewdest purchasing agents . . . the men who buy bulbs for leading industrial and commercial concerns, great railroad systems, and public utilities. Specify G-E MAZDA lamps . . . the kind that *Stay Brighter Longer* than inferior bulbs and give full lighting value for your money. General Electric Company, Dept. 166, Nela Park, Cleveland, Ohio.





• In addition to its own tests, G-E employs the Electrical Testing Laboratories — the largest independent electrical testing organization in America — to test approximately 10,000,000 MAZDA lamps a year. These tests show the amazing fact that less than 1/10th of 1% have defects that will affect their performance.

GENERAL ELECTRIC
MAZDA LAMPS

MAIL THIS COUPON FOR FREE BOOK

LEARN THE REAL FACTS ABOUT LAMP BULBS

GENERAL ELECTRIC CO., DEPT. 166, NELA PARK, CLEVELAND, O.
Please send me free of charge your booklet "They Stay Brighter Longer" containing facts about MAZDA lamps.

NAME .....

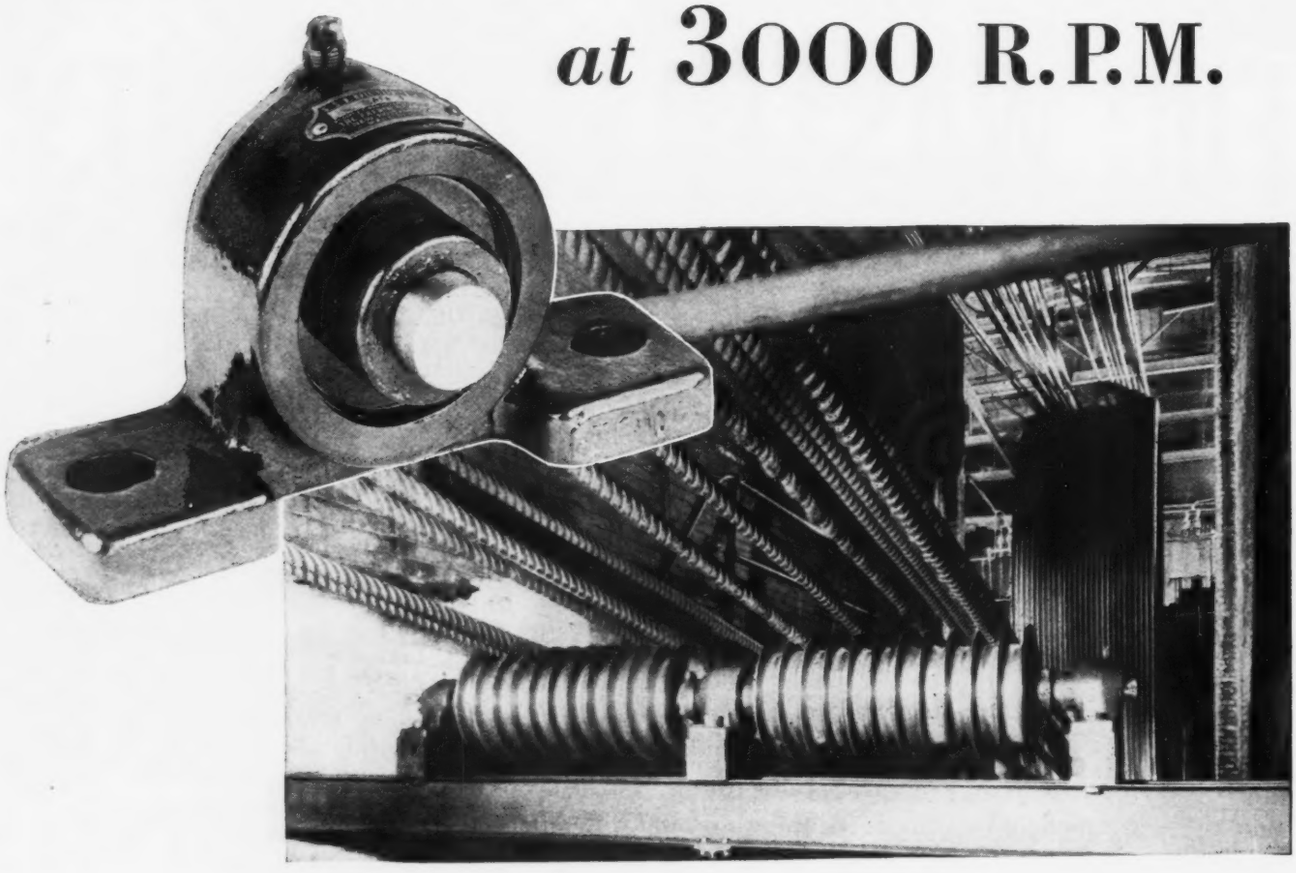
COMPANY .....

STREET ..... CITY ..... STATE .....

T-2

Operating Smoothly

at 3000 R.P.M.



Three Fafnir Single Ball Bearing Pillow Blocks keep the $2^{15}/_{16}$ inch countershaft in this South Carolina textile mill operating smoothly even at 3,000 r.p.m. Special conditions dictated the use of this rather uncommon three-in-line installation on the idler pulley of the auxiliary rope drive... a typical example of Fafnir's engineering service and ability to meet every field condition with the correct bearing from "the most complete line of types and sizes in America."

The quality of workmanship and design which characterize all Fafnirs and the completeness of the line assure the ideal anti-friction bearing for each and every service in the textile industry. Builders and users alike find that it pays to specify "Fafnir Ball Bearings" to gain lowest-cost machine performance over long periods of time.

Send for the complete details of Fafnir's service to the textile industry. The Fafnir Bearing Company, New Britain, Connecticut. Representatives also at: Atlanta, Georgia . . . Houston, Texas . . . Charlotte, North Carolina . . . Boston, Massachusetts . . . Dallas, Texas . . . Birmingham, Alabama.

FAFNIR BALL BEARINGS ARE NOW IN SERVICE IN SUCH TEXTILE MACHINERY AS THE FOLLOWING:

Bale Breakers	Dyeing Equipment
Feeders	Extractors
Openers	Dryers
Feed Tables	Printing Machinery
Distributors	Agers
Breaker Lappers	Soapers
Intermediate Lappers	Tenter Frames
Finisher Lappers	Calenders
Cards	Button Breakers
Roving Frames	Shoddy Pickers
Spinning Frames	Garnett Machines
Twisters	Burr Pickers
Winders	Mixing Pickers
Warpers	Scourers
Slashers	Fulling Mills
Looms	Shearing Machines
Bleaching Equipment	Rayon Pot Spinners

FAFNIR BALL BEARINGS

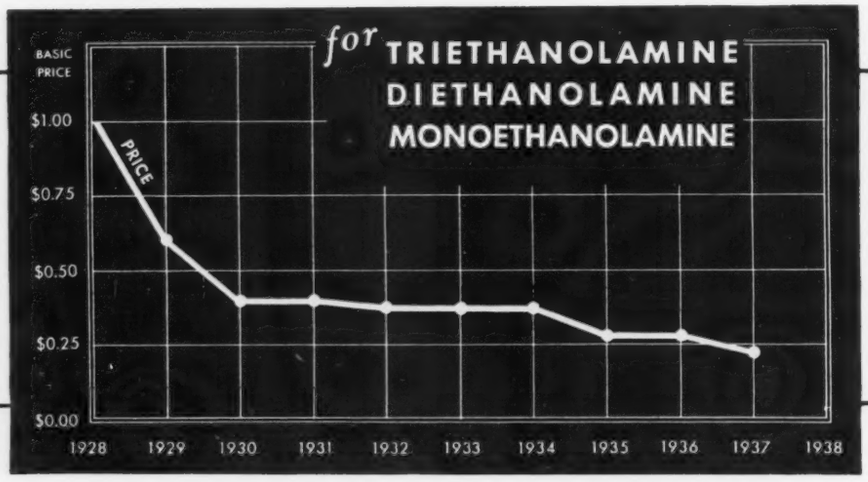
MORE THAN 100 TEXTILE MILLS BOUGHT HUNGERFORD & TERRY, INC., WATER PURIFYING EQUIPMENT IN 1936

WATER PURIFICATION PLANTS

DESIGNED—CONSTRUCTED—GUARANTEED

by HUNGERFORD & TERRY, INC., Clayton, N. J.

Again . . Lower Prices



Product Improvement Through The Use of These Compounds Now Can Be Achieved Profitably.

SUBSTANTIALLY lower prices for these three compounds are now in effect... new cost calculations and additional experimentation are in order. New and improved products which have been shelved awaiting lower ethanolamine prices should now be reconsidered.

With lower prices, the use of one of the ethanolamines becomes more economical than ever in production of emulsions, soaps, cosmetics, polishes, textile specialties, leather compounds, insecticides, cutting oils, water paints, shellac and casein dispersions.

Chemically, the ethanolamines behave like alcohols or amines. Triethanolamine in particular enters into many reactions characteristic of polyhydric alcohols. All of the ethanolamines, being extremely hygroscopic liquids, are excellent moistening agents.

A wide range of products can be made with these amines. The booklet on "Emulsions" contains 57 proved formulae using Triethanolamine. This book, together with the new low prices, will be gladly forwarded upon request.

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

UCC

30 East 42nd Street, New York, N. Y.

PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS

Color-in-Color, Color-beside-Color—*or both*—Also Plaids!

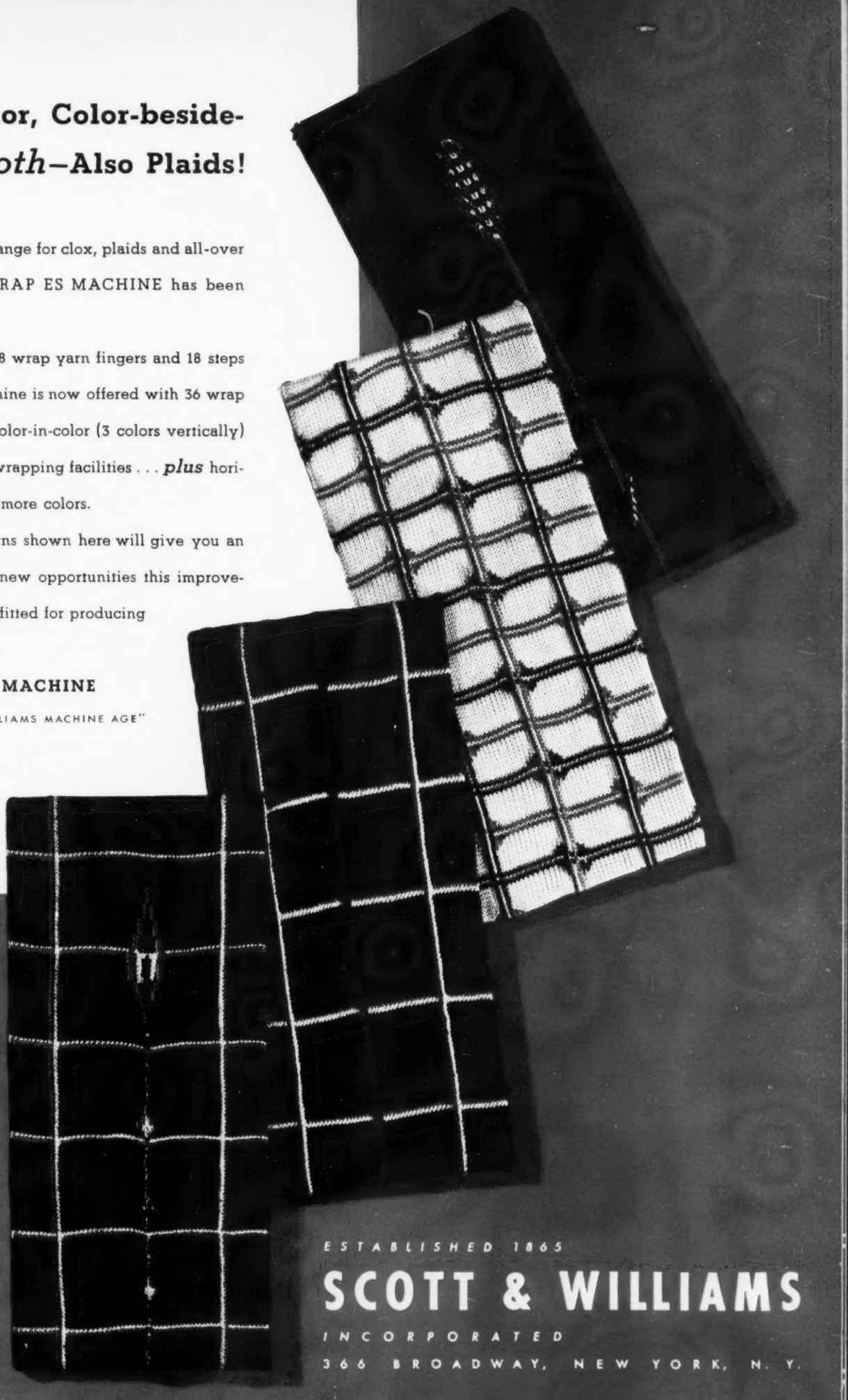
The pattern and color range for clox, plaids and all-over patterns on the 36 WRAP ES MACHINE has been greatly increased.

Formerly built with 18 wrap yarn fingers and 18 steps for patterning, this machine is now offered with 36 wrap fingers and improved color-in-color (3 colors vertically) and color-beside-color wrapping facilities . . . ***plus*** horizontal stripes in one or more colors.

A glance at the designs shown here will give you an idea of the interesting new opportunities this improvement presents. It is also fitted for producing the exclusive Gussetoe.

36 WRAP ES MACHINE

"THIS IS THE SCOTT & WILLIAMS MACHINE AGE"



ESTABLISHED 1865

SCOTT & WILLIAMS

INCORPORATED

366 BROADWAY, NEW YORK, N. Y.

STRIPES...STRIPES
...and Plaids!

With the addition of the horizontal yarn-changing striping attachment the scope of the HH-PW MACHINE has been further increased to include stripes and plaids—with or without clox or all-over wrap designs.

Thus the possibilities of this true wrap machine, with its 24 wrap yarns and 18 steps for patterning, are greater now than ever before. This improvement added to the well-known HH efficiency and economy, which eliminates separate ribbing machines and costly hand transfer of ribs, makes the HH-PW an even more versatile machine and considerably increases its profit-making abilities.

HH-PW MACHINE

"THIS IS THE SCOTT & WILLIAMS MACHINE AGE"

ESTABLISHED 1865

SCOTT & WILLIAMS

INCORPORATED

366 BROADWAY, NEW YORK, N. Y.

☆ Dollars Go Farther Results are Superior ☆

with Yarmor 302*

Wherever wet processing occurs in the production of textiles, Yarmor 302 Steam-distilled Pine Oil, made soluble, assists in obtaining better results and, by shortening production time, obtains a substantial saving in production costs. This is because of the unusual wetting-out and penetrating properties of Yarmor.

Whether you process cotton, wool, silk, or rayon, it will be to your advantage to investigate the merits of Yarmor 302.

The coupon is for your convenience in obtaining further information.

HERCULES NAVAL STORES

HERCULES POWDER COMPANY
INCORPORATED

994 MARKET STREET WILMINGTON, DELAWARE

BRANCH OFFICES

CHICAGO . . NEW YORK . . ST. LOUIS
SALT LAKE CITY . . SAN FRANCISCO

*Reg. U. S. Pat. Off.

HERCULES POWDER COMPANY
INCORPORATED
994 MARKET STREET, WILMINGTON, DELAWARE

Please send information about the value of Yarmor 302 in the following operation:

NAME _____

COMPANY _____

STREET _____

CITY STATE OO-42

PROTECT THE BEAUTY AND CHARACTER OF ACETATES

USE GARDINOL*

REG. U. S. PAT. OFF.

for acetate scouring and dyeing

FINE FABRICS deserve careful treatment. GARDINOL is a proven aid in preserving the luxurious appearance of cellulose acetate fabrics.

Since GARDINOL does not hydrolize into an alkaline solution, it exerts less saponifying action than soap on the acetate fibre. This means less harshness of the fabric, without affecting the dyeing characteristics and handle.

Uneven results caused by accidental rise in temperature are greatly reduced, since GARDINOL can be used at higher temperatures with less danger of saponification.

For further information regarding the varied uses of this modern processing agent, ask to see a representative of one of the sales agents listed below.

GARDINOL CORPORATION
GENERAL OFFICES, WILMINGTON, DELAWARE

SALES AGENTS

Procter & Gamble, Cincinnati, Ohio; National Aniline & Chemical Co., New York City

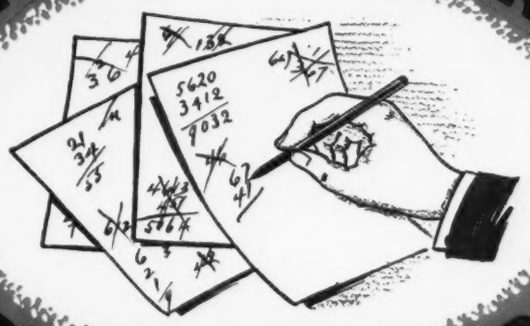
E. I. du Pont de Nemours & Co., Inc. Wilmington, Delaware

***GARDINOL WA**
***GARDINOL LS**
*PATENTED

AVAILABLE IN BOTH FLAKE AND PASTE FORM

"Gardinol" is the registered trade mark used by the Gardinol Corporation to designate its sulfated higher alcohols.

THE ANSWER TO RISING *Latex* PRICES



REDUCE COSTS — SAVE MONEY — IMPROVE CURES — PROLONG THE LIFE OF YOUR PRODUCTS

by using

R. S. L. ACCELERATORS and ANTI-OXIDANTS

RSL — RUBBER SERVICE LABORATORIES

Other products include:

EL-SIXTY	GUANTAL
PERFLECTOL	OXYNONE
UREKA C	SANTO-FLEX A
UREKA BLEND B	DPG
	A-32

CHEMICALS OF QUALITY — Monsanto — ST. LOUIS, U.S.A.

Monsanto Chemical Company

RUBBER SERVICE LABORATORIES DIVISION
AKRON, OHIO

Are these Special Textile Soaps Helping *You* do BETTER WORK at LESS COST?

OLIVE OIL SOAPS
Arctic Olive Oil Soap
Texolive Kwiksolv
Texolive Soap

TALLOW SOAPS
Arctic Crystal Soap Flakes
Arctic Crystal *Granulated*
Badger Flakes
Badger *Granulated*
Pearl Flakes
Pearl *Granulated*

PALM SOAP
Miltex Palm Soap

OLEIC ACID SOAP
Colgate Formula 10

FATTY ACID DERIVATIVES
Arctic Syntex A & T

BLENDED SOAPS
Green Arrow Soap Flakes
Colgate White Soap Flakes

GLYCERINE

NEW TEXTILE SOAP CATALOG TO HELP YOU DO BETTER WORK AND SAVE MONEY
SEND FOR YOUR Free COPY TODAY
FOR YOUR EMPLOYEES' WASHROOM
A modern dry soap dispenser that will not cake, clog or corrode. It measures out just enough of a special free-flowing form of Palmolive Soap for one wash each time... saving you 30% to 40% on soap costs. It provides 100 washes for 1¢.
Dependable
SOAPS for the TEXTILE INDUSTRY
COLGATE PALMOLIVE PEET CO.

COLGATE-PALMOLIVE-PEET CO.

105 Hudson St., Jersey City, N. J.

WE GUARANTEE THE QUALITY AND UNIFORMITY OF ALL OUR SPECIAL TEXTILE SOAPS

DU PONT
REG. U.S. PAT. OFF.

DYES

THERE'S A DU PONT DYE FOR EVERY TEXTILE USE

DU PONT DYESTUFFS
REG. U.S. PAT. OFF.

E. I. DU PONT DE NEMOURS & COMPANY, INC.
ORGANIC CHEMICALS DEPARTMENT • DYESTUFFS DIVISION
WILMINGTON, DELAWARE

YOU'VE HEARD THAT FAMILIAR OLD SAYING:

"A man is judged by the company he keeps" . . .

A modern version, applying particularly to your business, might read like this:

A RAYON OR ACETATE FABRIC CAN BE JUDGED BY THE SOAKING IT HAS HAD

Good soaking—or poor soaking—is bound to show up in the finished fabric. For it is in this important preliminary operation that the fibers take on the lubricating properties which mean so much in turning out saleable fabrics.

Rayons or acetates soaked with Olate and oil, or Olate and other soaking agents, are off to a mighty good start. The exceptional softening properties of this pure, neutral, low titer soap assure more thorough, more even lubrication of the fibers, smoother twist, greater protection against fuzziness and broken ends. Olate soaking will help to provide even shrinkage—to give your finished fabrics the clean, soft beauty and handle that assures saleability.

Olate is a big factor in the complaint-proof processing results now being obtained by many important manufacturers and dyers of rayons and acetates. You'll find Olate equally helpful.

Olate

PROCTER & GAMBLE · General Offices, Cincinnati, Ohio

. . the universal textile soap

Try Concental

For Sanforizing

CONCENTAL is a highly concentrated softening agent, particularly suited to meet the special requirements of the sanforizing process • Because of the exacting methods of manufacturing, Concental withstands the high heat treatment of the sanforizing range.

It will not yellow.

It will not oxidize.

It will not develop rancidity.

It will not develop unpleasant odors even in long storage.

It will produce the soft full hand you like.

It will penetrate evenly and quickly.

It will save you money, because small quantities are required, and shipping and package costs are lessened.

For further information about Concental, address:

HERCULES POWDER COMPANY
INCORPORATED

PROVIDENCE DRYSALTERS DIVISION

812-B Hospital Trust Building, Providence, Rhode Island

PMT-5

LAUREL PROCESSING AGENTS FOR:

Soaking	Sizing
Degumming	Coning
Bleaching	Finishing
Lubricating	Penetrating
Scouring	Dull-Finishing
Fulling	Waterproofing

LAUREL Processing Agents do just that. Theirs is the gentle treating action which the Textile Quints—Silk, Cotton, Linen, Wool and Rayon—need to develop their latent as well as their manifest commercial possibilities.

Laurel Processing Agents increase the life span and market value of the textile fibers by matching their requirements through all their various tender stages—from the cocoon, the plant, the hide, and the laboratory—to that highly desirable state in world markets which means consumer demand.

Laurel Technicians strive constantly to find better and more economical ways of preparing textile fibers for their proper place in fashion and industry.

Mills everywhere depend on the Laurel Processing Agents for the right start and the right finish of their knit and woven fabrics. Are you profiting by such a start and finish?

Laurel

SOAP MFG. CO., Inc.
William H. Bertolet's Sons
Established 1909
2606 E. TIOGA STREET PHILADELPHIA
Warehouses: Paterson, N. J. Chattanooga, Tenn. Charlotte, N. C.

IT ALL STARTS WITH Water

STEAM PRODUCTION • SILK DEGUMMING
WOOL SCOURING • RAYON PROCESSING • COTTON BOIL-OFF

WHETHER you produce woolens, cotton goods, silks, or rayons—it all begins with water. If the water is hard, trouble starts in scouring, boiling-off, degumming, rayon processing, steam production. And the effects continue to create losses in every succeeding operation.

The Permutit organization, largest in the world specializing in water conditioning, has worked "hand in glove" with textile men for twenty-five years. Permutit water softeners, and Permutit equipment for the removal of dirt, chemical impurities, iron and manganese salts, and other deleterious elements from water, are extensively used in many mills. No matter what elements, or combination, in your water supply are giving trouble, Permutit will locate the difficulty, make corrective recommendations, install required equipment, establish same in successful operation, train your men to carry on, and periodically check your results.

PERMUTIT

Offers Additional Large Savings in Your Steam Plant

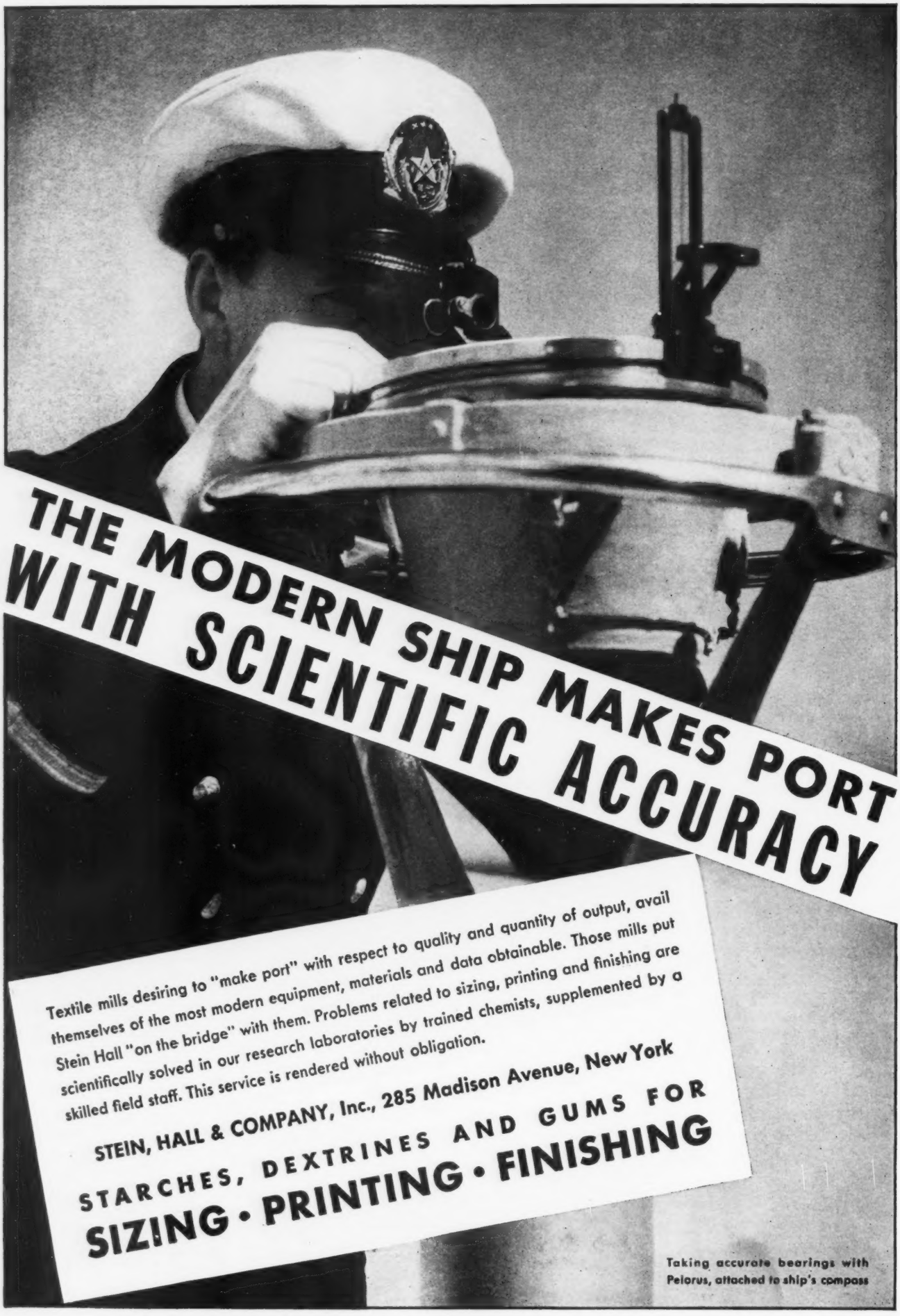
Permutit is prepared to condition your feedwater for continuous maintenance of optimum steaming conditions inside your boiler. This means elimination of scale, freedom from foaming and priming, and maintenance of a proper sulphate-carbonate ratio at all rates of operation. Permutit equipment includes: (1) Water softeners (zeolite, hot or cold lime-soda, lime zeolite, or internal treatment); (2) Continuous blow-off system for automatic control of salines in feedwater; (3) Deaerators; and (4) the widely known and used Ranarex Mechanical CO_2 Meter.

Maintenance of a proper CO_2 ratio in flue gas with a Ranarex is the direct guide to economical boiler firing. *Special:* A new indicating-type Ranarex is now available at a notably low price. Inquire about it.

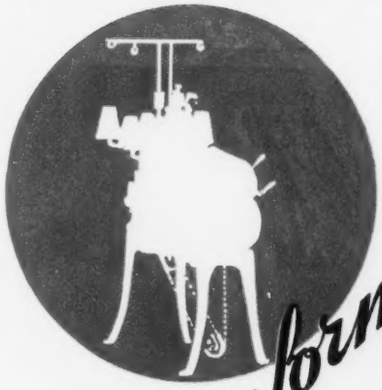
Permutit engineers will help you in any phase of process or steam plant water conditioning—or CO_2 meter practice. Please address your inquiry to The Permutit Company, Dept. B3, 330 West 42nd Street, New York, N. Y.

Permutit

Water Conditioning


THE MODERN SHIP MAKES PORT
WITH SCIENTIFIC ACCURACY
Textile mills desiring to "make port" with respect to quality and quantity of output, avail themselves of the most modern equipment, materials and data obtainable. Those mills put Stein Hall "on the bridge" with them. Problems related to sizing, printing and finishing are scientifically solved in our research laboratories by trained chemists, supplemented by a skilled field staff. This service is rendered without obligation.
STEIN, HALL & COMPANY, Inc., 285 Madison Avenue, New York
STARCHES, DEXTRINES AND GUMS FOR
SIZING • PRINTING • FINISHING
Taking accurate bearings with Pelorus, attached to ship's compass

AMERICAN KNITTING YARNS



performance Quality

BE assured of an extra measure of quality in your Spring Line to meet the trading-up so apparent this season . . . . a measure of quality of which American Super-Mercerized Durene fills the bill.

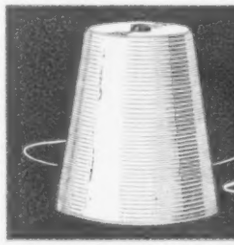
Here is a knitting yarn (all counts) built-up from carefully selected raw cotton and brought through step-by-step with great care and skill to a finished product that is making highest performance records for smooth, low cost production wherever used.

American Super-Mercerized Durene will not dye streak. Try it. The samples are on us.

AMERICAN
YARN AND PROCESSING COMPANY

MOUNT HOLLY N. CAROLINA

CHICAGO, ILL.	CHATTANOOGA, TENN.	HIGH POINT, N. C.	NEW YORK, N. Y.	PHILADELPHIA, PA.	CHARLOTTE, N. C.
Mr. E. W. Wood	Mr. Tom Moore	Mr. E. J. Holbrook	Schoolfield-Sauer Co.	Schoolfield-Sauer Co.	Cosby & Thomas
222 West Adams St.	735 Chestnut St.	Mallory Street	40 Worth St.	1600 Arch St.	Johnston Building



It's the yarn that counts

AMERICAN *Super-Mercerized Durene*

An Important Contribution to the Textile Industry

● Little more than a year ago Armour and Company was pleased to announce to the textile industry, a new, laboratory-perfected, pre-tested vegetable oil soap called CERTIFIED FLAKES.

Now, a year later, we are extremely happy to report that in actual mill work—in wool scouring, yarn dyeing, in silk throwing and other light duty operations—it has more than lived up to the enthusiastic claims we made for it.

Developed in the laboratory, and subjected to strict laboratory control in every step of its manufacture, CERTIFIED FLAKES has been enthusiastically endorsed for all operations requiring a light fulling soap. Its uniform quality and the uniform results obtained with its use have aroused unusual interest and comment.

If you are not already using this revolutionary new soap, we recommend that you order a test barrel or bag today. CERTIFIED Stock comes in three forms for your convenient use—flakes, bars and solid barrel pack. You'll find it the most satisfactory soap ever used in your mill operations.

INDUSTRIAL SOAP DEPARTMENT

ARMOUR AND COMPANY

1355 W. 31st STREET • CHICAGO, ILLINOIS

Most spinners have two jobs to do—*spinning*. . and traveling back and forth, *cleaning.*

Let your spinners "tend to their knitting"—and make cleaning automatic. Parks Automatic Equipment *cleans better*—and at frequent, regular intervals. It cleans all surfaces above the ring rails with a current of air that blows accumulated fly outward and downward to the floor—where it is easily disposed of. Slugs and bunches are almost entirely eliminated. Breakage, loom stoppage and seconds are greatly reduced. *Production goes up. Costs go down.*

There are two types of Parks Cleaners. *Both* have the same automatic operation. *Both* pay for themselves in short order. One, the Parks Turbo, is mounted on the creel boards or rods. The other—the Bunchless Cleaner—runs on monorails suspended from the ceiling. Send the coupon below for complete information about both types—or check the line on the coupon that will bring a Parks engineer to explain about the economies that Parks Automatic Traveling Cleaners are bringing to other mills. Mail the coupon today—no obligation.

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Dixie durene comes to this knitter's machines with a long history of tests and precision manufacturing methods behind it. For that reason, experience with this yarn in the knitting mill tells everyone there that each shipment will run smoothly, that there will be a minimum of seconds. Experience with the yarn leads the mill management to expect and get regular-knit, fuzz-free (because the yarn is thoroughly gassed) socks in just the right color tones. And, more important, retail buyers and the public recognize these features and associate them with the brand name on the socks.

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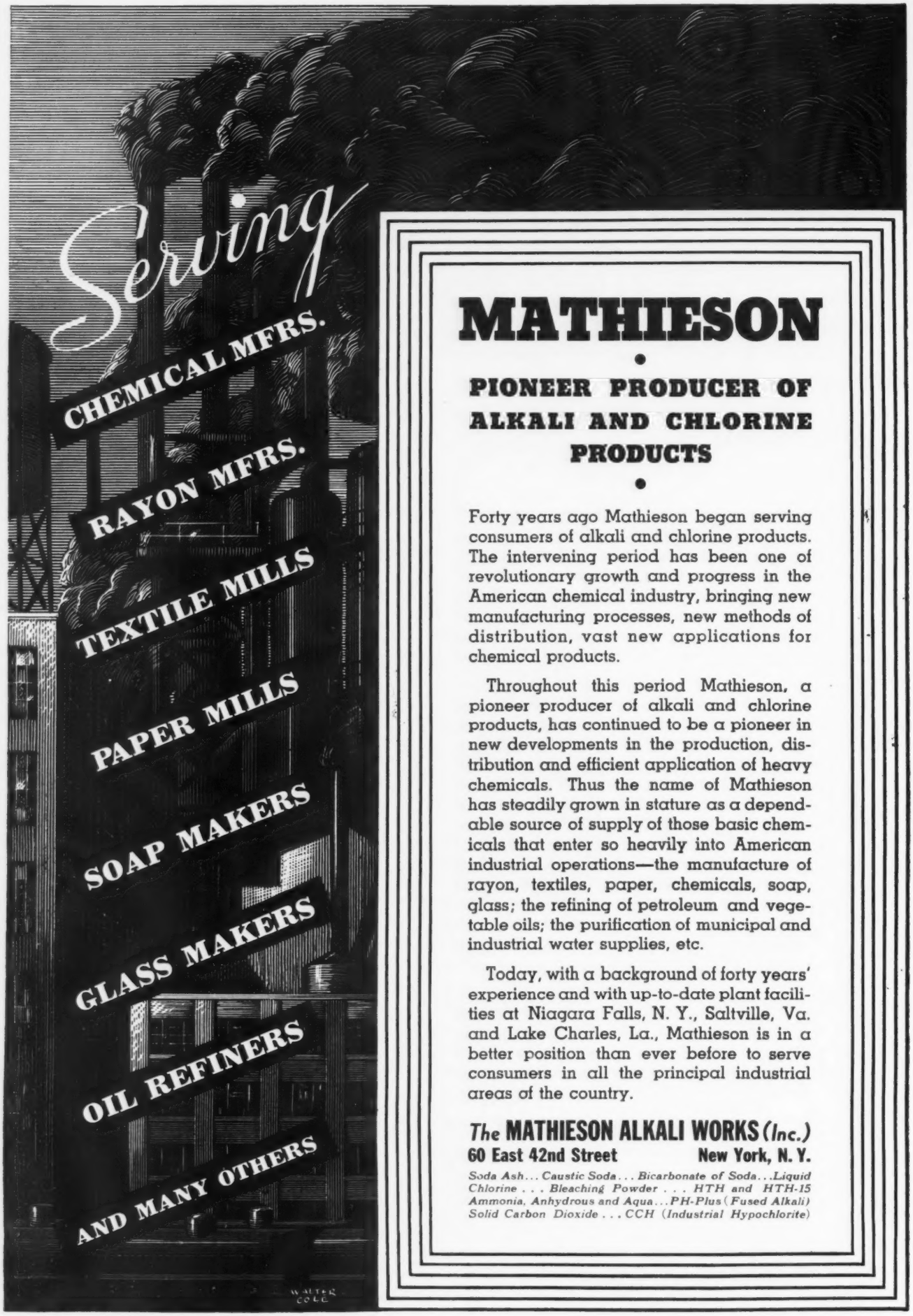

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